VOL. LXVI JANUARY, 1925 NEW SERIES VOL. 19, NO. 4

JOURNAL
of the
American Veterinary Medical Association

FORMERLY

AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Assn.)

EDITED AND PUBLISHED FOR

The American Veterinary Medical Association

CONTENTS

Editorial 407
Coming Veterinary Meetings 413
Papers:
Agricultural Extension, Regulatory Service and Veterinary Practice—T. E. Munce 415
The Surgery of the Feet of Cattle—T. H. Ferguson 432
Animal Disease Control—R. C. Julien 440
Hog Cholera Problems as They Relate to the Practitioner—R. R. Birch 448
A Modification of the Chloroform Process for Clarifying Hog Cholera Serum —R. R. Henley 462
Concerning the Pathology of Contagious Abortion—W. W. Williams 468
Demodectic Mange of the Goat in the United States—Eloise B. Cram 475
Eberthella Viscosa (Bact. Viscosum Equi); Etiological Factor in Joint-Ill—Ethel M. Snyder 481
Eggs of Ankylostoma Caninum—Howard Crawley 487
Early Conditions of the Veterinary Profession in the Hawaiian Islands—A. R. Rowat 490
The Occurrence of a Disease of Chickens in New York State, Caused by a Filtrable Virus—E. L. Brunett 497
Some Veterinary Reminiscenses VI—N. S. Mayo 499
Clinical and Case Reports:
Nightshade Poisoning in Chickens and Ducks—Albert A. Hansen 502
Reviews 504
Abstracts 506
Army Veterinary Service 509
Association News:
Minutes of Meeting of Executive Board 510
Organization of the A. V. M. A., 1924-1925 512
Other Meetings 515
Officers of State Veterinary Medical Associations 527
Bibliography on Bovine Infectious Abortion 532
Necrology 537
Personals 540

THE JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION is issued the first of each month. *Manuscripts and copy for insertion should be as nearly perfect as possible for the printer and should be received by the tenth of the preceding month to insure insertion in the next month's issue.* Volumes begin in April and October.

Communications relating to publication, subscription, advertisements and remittance for the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, as well as matters pertaining to the American Veterinary Medical Association and membership should be sent to Dr. H. Preston Hoskins, Secretary-Editor, 735 Book Bldg., Detroit Mich.

$4.00 per annum Foreign $5.00; Canada $4.25 Single Copies 40 cts. in U. S.

Entered as Second-Class Matter, March 15, 1923, at the Post Office at Detroit Mich. under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3 1917; authorised October 26, 1918

A Merry Christmas

and

A Happy and

Prosperous New Year

Zell-Straub Laboratories

Originators and Sole Producers of Flavisol

BIOLOGICS PHARMACEUTICALS SPECIALTIES

5514-20 Norwood Park Ave. **Chicago, U. S. A.**

JOURNAL

OF THE

American Veterinary Medical Association

FORMERLY AMERICAN VETERINARY REVIEW

(Original Official Organ U. S. Vet. Med. Ass'n.)

H. Preston Hoskins, Secretary-Editor, 735 Book Building, Detroit, Mich.

L. A. Merillat, President, Chicago, Ill. M. Jacob, Treasurer, Knoxville, Tenn.

Executive Board

Geo. Hilton, 1st District; T. E. Munce, 2nd District; D. S. White, 3rd District; J. R. Mohler, 4th District; C. E. Cotton, 5th District; B. W. Conrad, 6th District; Cassius Way, Member at Large, Chairman.

Subcommittee on Journal

D. S. White J. R. Mohler

The American Veterinary Medical Association is not responsible for views or statements published in the Journal, outside of its own authorized actions.

Reprints should be ordered in advance. Prices will be sent upon application.

Vol. LXVI, N. S. Vol. 19 January, 1925 No. 4

A VETERINARIAN SPEAKS BACK

We have been afforded an opportunity to peruse two recent issues of the *Knoxville (Iowa) Express*, each of which contains a communication of interest to veterinarians. One issue contains a letter written by A. J. Banks, of Montour, Iowa. We are advised that this individual was a candidate for Governor of Iowa at the Republican primaries last spring. We hope that Mr. Banks is better posted on affairs of state than he is on certain veterinary problems, concerning which he has undertaken to broadcast information. Mr. Banks evidently thought that it was an opportune moment to do this while a drive was on in his county in connection with area work in bovine tuberculosis eradication.

It is regrettable that editors of decent newspapers are so prone to give space to communications containing such nonsensical statements as are set forth in the letter in question. On the other hand, it is pleasing to note that the editor of the *Knoxville Express* gave considerably more prominence to an article promptly prepared by Dr. C. J. Scott, of Knoxville, Iowa, refuting all of the erroneous statements concerning tuberculosis and tuberculin testing made by Mr. Banks. Whereas the latter dealt with generalities, most of which were wrong, either by actual statement or by inference, Dr. Scott came back with statistics

and specific references to substantiate his statements. We wish to commend heartily the prompt action upon the part of Dr. Scott in so ably presenting the true facts in the case.

One pertinent statement made by Dr. Scott should put at rest any doubts as to whether or not veterinarians are attempting to feather their own nests by getting behind movements of this kind. Dr. Scott says: "From a financial point of view the local veterinarians are making more money from tuberculin testing, as it is now carried on, than they could possibly get under the county area plan." We hope that the significance of this statement will "sink in," and deeply, too, not only in the case of Mr. Banks, but in all others who question the altruistic motives of veterinarians who lend support to any movement having for its object the ultimate eradication of bovine tuberculosis.

MORE VETERINARIANS AS LEGISLATORS

For the fourth consecutive term, Dr. Wm. Albertson Haines (U.P. '07), of Bristol, Pa., has been elected without opposition to represent Bucks County in the 1925 state legislature. During the 1923 session, Dr. Haines was chairman of the House Agricultural Committee, and it is expected that he will be selected for the same important post this year. As Bucks County has been in the habit of *not* electing representatives for more than two terms in succession, it is evident that Dr. Haines is a striking exception, undoubtedly due to the character of his services in the past and the gratefulness of his constituents for what he has accomplished in their behalf.

DR. W. A. HAINES

We are sorry that a lack of time prevented us from saying more about Dr. Redfield C. Mills (K.C.V.C. '15) in the December issue. Dr. Mills is a native son of Redfield, Iowa, where he is in practice and where he

operates the Tanglewood Stock and Poultry Farm. He is interested in the breeding of spotted Poland-China hogs, rose-comb Rhode Island chickens, and white collie dogs. Dr. Mills served overseas in the late war, having been discharged with the rank of first lieutenant. He has never held public office before, and was opposed, both at the primaries and in the general election, by candidates who were members of the legal profession. Dr. Mills won by a big majority. He will represent the 17th senatorial district (Dallas, Guthrie, and Audubon counties).

DR. REDFIELD C. MILLS

We are pleased to allow our members to become better acquainted with Dr. Fay F. Russell (Corn. '16), whose election to the New Hampshire legislature was announced last month, and whose likeness is reproduced this month. His modesty prevented us from getting his photo in time for the December JOURNAL. Dr. Russell has been our resident secretary for New Hampshire for four years.

DR. F. F. RUSSELL

Photo, Kimball Studio Concord, N. H.

Again, just as we are going to press, word comes that another practicing veterinarian, Dr. Josiah T. Little (U.P. '17), of Bloomsburg, Pa., was elected to the Pennsylvania House of Representatives from Columbia County. Any more?

TWO AMERICANS HONORED ABROAD

Word has been received through Dr. Adolph Eichhorn, that the Royal Veterinary College, at Budapest, upon the occasion of the celebration of the twenty-fifth anniversary of the granting to the College the standing of a Department of the University,

conferred the honorary degree of Doctor of Veterinary Medicine upon Dr. John R. Mohler, chief of the Bureau of Animal Industry. The same honor was accorded Dr. Theobold Smith, Sir John M'Fadyean, Prof. Th. Kitt, Prof. Dr. B. Bang, Prof. Dr. Beyer and Prof. Dr. Schmaltz.

This recognition of a member of the American veterinary profession is very gratifying, not only for the reason that so few have been similarly honored but because this new honor is so well deserved. The conferring of the veterinary degree upon Dr. Theobald Smith is particularly well merited and brings this great scientist right into our veterinary family circle. Our congratulations are extended, not only to Dr. Mohler and Dr. Smith, but to our six distinguished confréres in other lands.

FOWL PEST OR WHAT ?

The poultry industry of the country is very much disturbed over the appearance of a disease which has caused a heavy mortality among the flocks in certain states. The New York City Health Department has placed an embargo on live chickens from eight states: North Dakota, South Dakota, Missouri, Kansas, Illinois, Indiana, Iowa and Nebraska. Many newspaper articles have been published throughout the Central West in which the disease has been variously designated "flu," "diphtheria," and "pneumonia." In some cases the disease has appeared on farms among native fowls. In other cases the disease (assuming that it is the same one) appears to be an infection contracted by chickens either while in transit ("shipping fever?") or while they are being fattened for sale in poultry market feeding batteries.

Announcement is made in this issue of the JOURNAL of the findings of Dr. Brunett, of the N. Y. State Veterinary College at Cornell University, which would point strongly to the presence of fowl pest in this country. If his findings are confirmed by subsequent investigations, another disease due to a filtrable virus is added to the list of those that have invaded the United States. The past year appears to have been particularly favorable, for some unknown reason, to the prevalence of infections caused by filtrable viruses. We have had two separate outbreaks of foot-and-mouth disease; rabies has been unusually wide-spread; small pox and poliomyelitis, in the human family, have been considerably above the average in certain parts of the country.

ATTENTION IN HIGH PLACES

It has been both our privilege and pleasure to read the presidential address delivered before the Association of Land Grant Colleges by Dr. Raymond A. Pearson, of Iowa State College. As all of us only too well know, agriculture has been in the dumps, speaking plainly. The depression has extended to the agricultural colleges, as is reflected in the student enrollment, which has not kept pace with the enrollment in other lines of study, and has actually shown a decrease in some institutions during recent years.

Dr. Pearson quotes from authoritative statistics on the enrollment in land grant institutions:

	1911–12	1921–22
Number of students	84,663	204,834
Agriculture	9,720	14,398
Forestry	487	629
Engineering	14,847	25,989
Home Economics	2,506	6,090
Military Science and Tactics	20,299	37,399
Veterinary Science	494	450

The comment is made that it is a mistake to think that education in agriculture will not yield good returns. Dr. Pearson states:

"We can only express our regrets that just now a few young men who are adapted to farm life and would be a credit to farm life have been lost because they and their advisors have misinterpreted the agricultural situation."

That portion of the address which interested us most was the comment on veterinary enrollment. The statement is made:

"Enrollment in veterinary medicine also has declined in the few institutions where this important subject is taught. This also is due to misunderstanding. The great increase of automobiles, with decrease of horses on the highways, has been construed to mean that there is less need for veterinarians.

"Those who are interested and who have been influenced by the facts just stated should note some other facts, namely: the value of domestic animals in this country is increasing enormously. This is partly due to the increase of pure-bred and high-valued stock. The census records show the following:

Value of Domestic Animals on Farms in the United States

	1900	1910	1920
Horses	$896,513,217	$2,083,588,195	$1,782,077,487
Mules	196,222,053	525,391,863	779,294,411
Cattle	1,475,204,633	1,499,523,607	3,651,970,229
Sheep	170,203,119	232,841,585	395,401,286
Goats	3,265,349	6,176,423	17,565,363
Swine	231,978,031	399,338,308	988,582,380

"In round numbers the value of domestic animals in 1900 was three billion dollars and in 1920 it was eight billion dollars. To the surprise of most people the census figures show there were slightly more horses in the United States in 1920 than there were in 1900. During the same twenty-year period the number of mules increased more than sixty per cent."

One of the present problems is the distribution of veterinary service. As in other professions, though to a lesser degree, there

is a noticeable tendency, upon the part of the recent graduate, to locate in the large cities. Coupled with this fact are the discouragements which have driven no small number of practitioners from strictly rural communities. Dr. Pearson states:

"There are large areas having enormous values of live stock that do not have the services of well qualified veterinarians. Furthermore the importance of veterinary inspection work is rapidly increasing with more and more municipalities and states as well as the United States government calling for additional help of this kind.

"The veterinary profession is reported as having about 12,000 members in the United States and Canada. This number decreases about 600 per year by reason of deaths and withdrawals. New veterinarians are being graduated now at the rate of only about 150 per year from the standard veterinary educational institutions in the United States and Canada. Up to about five years ago the number varied from about 600 to 800 annually."

Turning to the subject of veterinary education, Dr. Pearson utters a timely word of caution, and suggests a possible remedy, when he says:

"The question of veterinary education is one that needs attention in high places. A nation with such large interests in live stock cannot afford to be without veterinary service and protection. The live stock industry has never prospered in any nation without this service and protection. Without it we will be exposed at any time to the introduction and spread of highly contagious animal diseases which are prevalent in other countries. We have had our experiences and know that one such catastrophe may cost this country many times what it would cost to subsidize many hundreds of veterinarians. A subsidy is not asked for but foresight is urgently recommended with the belief that if the problem is studied a practical remedy can be found."

It is the concluding paragraph which best shows the grasp Dr. Pearson has of the subject under discussion. Our big problem right now is to get the right people in the right places to thinking about the present situation and what it may lead to if allowed to go too far in the direction in which it now seems to be headed.

As Dr. Pearson says, a subsidy is not asked for, just fair consideration and treatment. The veterinary profession has always been able to stand on its own feet, but lately there have been entirely too many forces trying to knock the props from under it.

EXECUTIVE BOARD ELECTION

Ballots calling for nominations for a member of the Executive Board for District Number 5 were mailed, on December 15, 1924, to all members in the district in good standing. This district is composed of Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Montana, Wyoming, Idaho, Washington, Oregon, Alaska, Hawaii and the Philippine Islands. This is a large district, with upwards of 800 members. Curiously enough,

this district has been honored with both the 1924 and 1925 conventions.

It is hoped that a large vote will be polled. There has been a great deal said, both for and against mail ballots, but as long as this is the legalized method of electing the members of the Executive Board, let everybody take an interest in this election and *vote!* It is planned to keep the polls open until March 1, 1925, so as to enable our members in the Philippines to vote. Election ballots will then be mailed, as soon as the tellers have counted the nominating ballots and certified to the five receiving the highest number of votes. The election polls will be closed May 15, 1925.

APPLICATIONS FOR MEMBERSHIP

(See October, 1924, JOURNAL)

FIRST LISTING

SCHMOKER, EDWARD A. c/o Carnation Stock Farm, Tolt, Wash.
D. V. M., Kansas State Agricultural College, 1917
M. S., Cornell University, 1919
Vouchers: Carl Cozier and R. R. Dykstra.

VASELIUS, GEORGE GUSTAV EMIL Box 52, Spencer, N. Y.
D. V. M., Cornell University, 1923
Vouchers: V. A. Moore and W. A. Hagan.

APPLICATIONS PENDING

SECOND LISTING

Brauner, Victor J., Box 271, College Station, Tex.
Hamilton, William A., Danville, Vt.
Kreidler, C. G., New Capitol Bldg., Frankfort, Ky.

COMING VETERINARY MEETINGS

Pennsylvania, Conference of Veterinarians of. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. Pa. Jan. 6-7, 1925. Dr. Louis A. Klein, Dean, 39th St. and Woodland Ave., Philadelphia, Pa.

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Jan. 7, 1925. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Ohio State Veterinary Medical Association. Deshler Hotel and Ohio State University, Columbus, Ohio. Jan. 7-8, 1925. Dr. Walter R. Hobbs, Secretary, Ohio State University, Columbus, Ohio.

New Jersey, Veterinary Medical Association of. Jersey City, N. J. Jan. 8, 1925. Dr. P. B. Silvester, Secretary, Princeton, N. J.

Virginia State Veterinary Medical Association. Richmond, Va. Jan. 8-9, 1925. Dr. H. T. Farmer, Secretary, Richmond, Va.

Indiana Veterinary Medical Association. Hotel Severin, Indianapolis, Ind. Jan. 13-14-15, 1925. Dr. R. H. Boyd, Secretary, 446 E. 10th St., Indianapolis, Ind.

Colorado Veterinary Medical Association. Fort Collins, Colo. Jan. 14-15-16, 1925. Dr. A. G. Fisk, Secretary, Greeley, Colo.

Maryland State Veterinary Medical Association. Medical Hall, 1211 Cathedral St., Baltimore, Md. Jan. 15, 1925. Dr. E. M. Pickens, Secretary, College Park, Md.

Cornell University, Seventeenth Annual Conference for Veterinarians at. Cornell University, Ithaca, N. Y. Jan. 15-16, 1925. Dr. V. A. Moore, Dean, N. Y. State Vet. Coll., Ithaca, N. Y.

Minnesota State Veterinary Medical Association. Radisson Hotel, Minneapolis, Minn. Jan. 15-16, 1925. Dr. C. P. Fitch, Secretary, University Farm, St. Paul, Minn.

Mississippi State Veterinary Medical Association. Greenville, Miss. Jan. 19-20, 1925. Dr. C. G. Stalworth, Secretary, Drew, Miss.

Iowa Veterinary Association. Savery Hotel, Des Moines, Iowa, and Iowa State College, Ames, Iowa. January 20-21-22-23, 1925. Dr. E. R. Steel, Secretary, Grundy Center, Iowa.

Arkansas Veterinary Medical Association. Hotel Marion, Little Rock, Ark. Jan. 22, 1925. Dr. Hubert Shull, Secretary, Texarkana, Ark.

Michigan Agricultural College Short Course for Veterinarians. East Lansing, Mich. Jan. 26-27-28-29-30, 1925. Dr. Ward Giltner, Dean, East Lansing, Mich.

Wisconsin Veterinary Medical Association. Park Hotel, Madison, Wis. Jan. 27-28-29-30, 1925. Dr. O. H. Eliason, Secretary, 226 W. Gilman St., Madison, Wis.

South Dakota Veterinary Medical Association. Sioux Falls S. D. January 28-29, 1925. Dr. C. C. Lipp, Sec.-Treas. Brookings, S. D.

Alabama Veterinary Medical Association. Short Course for Practitioners. Auburn, Ala. Feb. 2-3-4-5-6-7, 1925. Dr. C. A. Cary, Secretary, Auburn, Ala.

Kansas Veterinary Medical Association and the Fourth Annual Conference of Kansas Veterinarians. K. S. A. C., Manhattan, Kans. Feb. 4-5-6, 1925. Dr. Chas. Bower, Secretary, 1128 Kansas Ave., Topeka, Kans.

AGRICULTURAL EXTENSION, REGULATORY SERVICE AND VETERINARY PRACTICE[1]

By T. E. MUNCE, *Harrisburg, Pa.*

Every enterprise, business and profession is confronted with difficult problems which require for their solution a careful study under the guidance of trained and far-sighted leaders. The veterinary profession has not escaped its share of baffling problems.

Today the veterinary profession has a very important problem to meet in helping to define and establish the proper relation between agricultural extension service, regulatory veterinary service and veterinary practice.

The object of this paper is an attempt to arrive at the causes of friction among agricultural extension, regulatory service and veterinary practice, and to try to point a way of preventing them.

Every institution, to exist, must serve a definite purpose. It must have a directing head who can, through cooperation of the individual units, promulgate the proper plans of action and measure the results in such a way as to serve best the purpose of the institution. To carry these plans to a successful conclusion men are needed with broad-visioned friendliness to new ideas, in order that the promulgated plans may be properly carried into effect.

Agriculture will have been elevated to the high plane deserved for it only after its contributing units have forgotten conflict; have become entwined with that cooperation necessary to harmony; have become awakened to personal responsibility; have assumed that individual share of responsibility and have coordinately combined individual efforts as service rendered for the greatest industry in the world. When that has been accomplished, elaborations on the subject to which we are giving consideration will no longer be necessary. If harmony had prevailed there would be no object now in speaking on this delicate subject.

The speaker has given considerable attention to prevention—prevention of disease and prevention of conflicts; also to cooperation—cooperation of regulatory officials with agricultural extension workers and practicing veterinarians. In many states there have been numerous instances of encroachment of one upon the field of the other. It is gratifying to say that in our state there

[1]Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

have been few such complaints. You will therefore readily understand that in discussing existing conditions in other sections of our country the suggestions are not based on results obtained in correcting these conditions in the speaker's home state where they do not exist.

Perhaps practicing veterinarians and those engaged in regulatory work have done most harm by failing to recognize the need and efforts of agricultural extension and refusing to lend its cause sympathetic support. Regulatory officials and practicing veterinarians in many instances have gone so far as to criticise adversely agricultural extension work. This criticism in too many instances is justified.

A Better Understanding Needed

A closer contact and an intelligent cooperation between agricultural extension, regulatory service and veterinary practice is needed to promote a better understanding. Too often the extension man thinks only about his own field, the regulatory official thinks only of his duties, and the practitioner thinks only about his practice. Thus, each proceeds to judge and act from his own viewpoint. Misunderstanding, jealousy, selfishness and lack of interest have seemingly stimulated more criticism than can be charged to other causes. Lack of interest is a forerunner to lack of understanding. Lack of understanding in many instances is the result of insufficient training, or selfishness. Students in both agricultural and veterinary schools should be strongly impressed with the principles involving their sense of duty and responsibility.

Regulatory workers and county agents in many states have unquestionably been performing work that should be done by local practicing veterinarians. Representatives of agricultural extension, regulatory service and veterinary practice should not only know and perform their own duties but should understand and respect the marginal line which brings into play the necessity of cooperation.

Unfortunately, some veterinary publications have adversely criticised agricultural and regulatory service without apparent attempt to offer any real constructive solution of the problem. If veterinary publications which are largely instrumental in molding the attitude of the practitioners would all take a more consistent and constructive view of this whole problem, unquestionably better results would be accomplished.

Some agricultural papers are cognizant of the friction between agricultural extension, regulatory service and veterinary practice, and are using their influence to bring about a better understanding among the three. The *National Stockman and Farmer*, speaking editorially in the issue of May 3, 1924, under the caption, "Some Opposition," says:

> "Some reaction against agricultural extension work is visible to the naked eye. Part of the opposition is justified because some extension men have gone far beyond the boundaries of their legitimate field of work. Part of it is mistaken, a result of the false idea that extension is merely to increase production. Economical production, for the sake of both producers and consumers, is the real object. Can anybody find any real fault in that?"

Those agricultural and live stock papers which have been either overlooking or ignoring this deplorable situation might also, with profit, take more interest and lend their efforts in the same direction. To assume a passive interest or a side-line attitude, as did Gamaliel of old, in this or any other subject which affects an important industry, is not only wrong but displays short-sightedness on the part of those who are or should be deeply interested and in position to help. It was Emerson who said, "Things refuse to be mismanaged long * * * . Though no checks to a new evil appear, the checks exist and will appear * * * * . Nothing arbitrary, nothing artificial can endure."

Service

Service is needed more than anything else at the present time. True service, efficiently and unselfishly given, inspires confidence among men and leads to security and success. All around us we find examples of service. At eventide Edison says, "Let me light your home," and at the touch of a button there comes a blaze of light that rivals the day. The farmer delivers to us the produce of the world. The engineer moves mountains for our accommodation. These men are our servants. Some of them have received large financial rewards, but that is incidental. It is the service they have rendered which makes them great. They have made the world a better and happier place.

A tourist was walking through an old country churchyard in England, when he discovered, almost hidden by the kindly ivy, a plain slab of stone bearing this epitaph:

Here lies a miser who lived for himself,
And cared for nothing but gathering pelf.
Now, where he is or how he fares,
Nobody knows and nobody cares.

The same tourist later visited St. Paul's cathedral and observed a plain but massive statue beneath which was the inscription:

SACRED TO THE MEMORY
OF
GENERAL CHARLES GEORGE GORDON
WHO AT ALL TIMES AND EVERYWHERE GAVE HIS STRENGTH TO THE WEAK,
HIS SUBSTANCE TO THE POOR, HIS SYMPATHY TO THE
SUFFERING AND HIS HEART TO GOD

What a difference between those two records! When we are born, a mother must travel to the very edge of life. The first few years of our lives are made up wholly of services rendered to us. When we enter school we have the benefit of the experience of all the ages. Yet with all the service rendered us, how often do we forget the service *we owe*.

When we think of SERVICE let us not place on it the interpretation that he who serves best will receive the most money. may result that way, but a life rewarded with money alone is like the child that receives a little tinsel card as a reward of merit. Here is one man who takes bright-colored paints and covers a shoddy toy simply to make it sell. Another takes paint and with a skillful hand transfers a masterly conception to the canvas. The man who makes cheap toys may eventually become a millionaire—the artist may not even have his name on the income tax list; but in the final evaluation of service the artist's name will be written in raised letters on the tablets of the world's memory.

No individual or enterprise will be truly successful unless the major motive is true service. Those who can render the most beneficial service will be the most highly rewarded in the end. It is wrong to promote selfish personal interests. There is a more urgent need for strenuous effort and results when conditions are complex and when dissatisfaction prevails than at any other time. Well-given service is then recognized as earnest and truthful.

It is our task to render service to the benefit of those whom we would serve. We should give before receiving. When one is interested in the "how" of his job the results of service rendered will usually take care of the "how much."

Giotto drew a free-hand circle so perfectly, we are told, that he was given the task of designing the Cathedral at Florence.

Charles Delmonico said to the accomplished chef who sought employment, "Go into the kitchen and boil me a potato."

"Success comes from what you do, not what you plan."

Agricultural and veterinary educational institutions, in order to render true service, must have for their policy the principles of unselfishness and benevolence which will imbue the minds of agricultural and veterinary students with a loyal sense of fairness and justice.

The live stock and poultry industry, like every progressive business, is made up of units. These units, which are more or less go-betweens, must function in harmony to serve to best advantage the mechanism of which they are a part.

For a person to be physically and mentally fit, and thus one hundred per cent efficient, every part of the human mechanism must function perfectly. The organization of every great railroad system includes its traffic, finance, legal, real estate, accounting, purchasing and other departments. Our various other successful organizations of one kind and another are likewise, for administrative purposes, divided into departments. For any enterprise to serve successfully the purposes for which it is created, all departments or subdivisions thereof must perform fully and harmoniously their respective functions.

A Definite Duty For Each

Since each of the institutions (agricultural extension, regulatory service and veterinary practice) has a definite duty to perform and a definite service to render, each should develop the best knowledge and know the best methods in its particular line. From such information, service of the greatest value and benefit can be extended to stockmen and poultrymen. The several units should work together for the benefit of the live stock and poultry industry. They should find it their duties to contribute a service that will be of assistance in selecting, breeding and growing better live stock and poultry in a more economical way. They should likewise make stockmen and poultrymen acquainted with improper methods which in the end mean loss.

In this day of specialization each person who becomes interested in and specializes in a certain line and offers himself for public service is responsible for the rendering of a service in that specialty. For, to meet our responsibilities properly, know them thoroughly. Those needing service care not whence it comes. The public cares nothing about individual or institutional differences and squabbles. It is concerned in the service rendered and in the results produced by those rendering service.

Some person has truthfully said, "If we should spend less time

in thinking about our rights and more time in thinking about our responsibilities there would not be any further worrying about our rights."

The sooner agricultural extension, regulatory service and veterinary practice become instilled with the foregoing facts the sooner and, to a greater extent, will all concerned be benefitted.

Agricultural Extension

The Smith-Lever Act, providing funds to the land grant colleges for extension work in agriculture and home economics, passed by Congress in 1914, which is the foundation upon which extension work now stands, was meant to furnish a channel through which helpful information and assistance could be given. Section 2 of this Act defines what shall constitute extension work:

> "It shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications and otherwise."

Obviously, therefore, extension work within a state is for the dissemination of information and must be educational in character.

The extension service is made up of three inseparable units. These units are administrative, specialists, and county workers. Each unit performs a particular service in the development of the county and state extension programs.

The county agent, who constitutes one part and one unit in the service, is the local county worker or representative, and is in direct charge of the agricultural extension program in his county.

The duties of those appointed under the Smith-Lever Act, as outlined by Secretary of Agriculture Wallace, are as follows:

> "The work of the cooperative extension employes, whether county agents, home demonstration agents, * * * or other cooperative workers, is educational. These extension workers are public teachers, paid with money largely raised from all of the people by taxation and are charged with giving instruction and practical demonstrations in agriculture and home economics. Their work covers the entire rural field, which includes economic production, economic marketing and the development of better home, community and social conditions.
>
> "As they are public teachers, it is not a part of the official duties of extension agents to perform for individual farmers or for organizations the actual operations of production, marketing or the various activities necessary to the proper conduct of business or social organizations.
>
> "They may not properly act as organizers for farmers' associations, conduct membership campaigns, solicit membership; edit organization publications; manage business enterprises; engage in commercial activities; act as financial or business agents; nor take part in any of the work of the farmers' organizations, or of an individual farmer, which is outside of their duties as defined by the law and by the approved projects govern-

ing the work. They are expected, however, to make available to organizations such information as will be helpful to them and contribute to the success of their work."

To conform with recommendations made at the last annual meeting of this Association, by the Executive Board, let us quote from their report:

"Agricultural extension has for its basic object the promotion and improvement of all phases of agricultural activities. Thus agricultural extension work comes into close touch and relationship with the veterinary profession. Each has a definite and proper sphere of activity; and encroachment of one upon the prerogatives of the other will work disaster.

"The limitations of agricultural extension service may be very properly classified as strictly educational and promotive in character. The work of promotion in the development of better live stock is a part of the proper field of activity of the agricultural extension service, and to this work should be given the hearty cooperation of the veterinary profession."

Regulatory Service

Regulatory service embraces all federal, provincial, state, county and municipal employes engaged in the study, prevention, control and repression of transmissible animal and poultry diseases; enrollment of breeding animals standing for public service, also milk and meat hygiene.

The duties of regulatory officials are prescribed, by law, as follows: To make a study of transmissible animal and poultry diseases; to devise methods of prevention, control and eradication of these diseases; to promulgate and enforce laws and regulations designed to protect live stock, poultry and the human family from transmissible animal diseases; and to regulate the practices which, if not controlled, would have an effect deleterious to maintaining and improving live stock and poultry; also to promulgate and enforce laws and regulations having to do with the enrolling of breeding animals standing for public service and with milk and meat hygiene.

Therefore, regulatory service should be along investigational, administrative and law enforcement lines. In order to function most effectively, regulatory service must of necessity engage in a certain amount of research and educational work. Such work, however, should be confined to the subjects covered by the laws it is entrusted to enforce.

Regulatory officials should not attempt to replace qualified practitioners in the performance of routine regulatory field work. It is the responsibility of regulatory service to facilitate live stock and poultry improvement by cooperating with practicing veterinarians, thus assisting them in rendering valuable services as guardians of the health of live stock and poultry, also receiving

their help which is indispensable in the prevention and control of transmissible animal and poultry diseases.

Regulatory field work, to be most effective, should be mostly advisory, supervisory and police in character.

Regulatory officials can, as a rule, function to better advantage with and through the local cooperating agencies by instructing them regarding existing laws, regulations and quarantines, and the practicing veterinarians in the most approved methods of technic, etc.

The purpose of regulatory service is not to give instruction to laymen in diagnosing and treating animal and poultry diseases.

The proposed A. V. M. A. policy provides, with reference to regulatory service, as follows:

> "No laws or regulations will succeed in controlling diseases of animals unless veterinarians and owners of live stock are sufficiently interested and familiar with them to assist in such control.
>
> "Government control of animal diseases has extended so that those actively engaged in any branch of the veterinary profession have of necessity dealings with state, provincial and federal authorities. In order to promote a better understanding between private practitioners and regulatory officials and to permit greater freedom of individual effort, it is advisable that the following principles be observed.
>
> "(1) This Association recognizes the right of the states and provinces to employ veterinarians for the purpose of giving free professional service for the control of communicable diseases. It does not approve of the state or province denying any class of qualified veterinarians the right to render such service. The word "service" as used here refers to the actual performance of routine work, such as the application of diagnostic methods, treatment, etc., and does not refer to administrative regulatory service.
>
> "(2) When state, provinical and federal governments authorize the work of any duly qualified class of veterinarians who have met state, provincial and federal requirements, there should be no discriminatory regulation against their services. When indemnities are paid to owners for animals slaughtered because of infectious diseases, such indemnities should not be limited to animals condemned only by veterinarians regularly employed by the federal, state, county or provincial governments, but should be paid when such animals are disclosed as a result of a diagnosis of any qualified veterinarian authorized by the state or province, provided state or provincial and federal regulations governing the same are complied with.
>
> "(3) It is the opinion of this Association that the general use of special county, state, federal or provincial employes for the performance of routine work, like tuberculin testing where animal husbandry is developed and qualified practitioners are established, is not a wise permanent policy in the control of animal disease."

Veterinary Practice

By "veterinary practice" is meant that branch of the veterinary profession engaged in the general practice of diagnosing, preventing and treating all animal and poultry diseases. The general practitioner, likewise, is the result of special demands made for the preservation and improvement of live stock, including poultry, also the necessity for economic protection from

the ravages of disease, and for the protection of human beings from diseases transmissible from animals to the human family.

The demand for persons trained in animal diseases was responsible for the establishment of veterinary schools and, thus, for the extension of information pertaining to animal and poultry diseases. The person who interests himself in this specialty, and offers himself for public service, assumes the responsibility of protecting live stock and poultry from disease in his community. The practitioner is therefore a medium through which information on animal and poultry diseases is extended.

The duties of veterinary practice are to furnish a veterinary service in solving problems with reference to the health of animals and poultry, which require for their solution technical skill. The practicing veterinarian should not only use his best efforts in prescribing for the diseased animals and poultry of his client, but he should also be ready and willing to advise him regarding the prevention of disease. His duty to the other citizens of his community, who are the consumers of animal products, requires him to take an intelligent interest in meat and milk hygiene and in other public health problems in which animals are involved.

The veterinary practitioner, to discharge his duty to his client fully, must be familiar with the developments in the various branches of veterinary science and agriculture. He should also attend local livestock and poultry meetings and endeavor to keep in touch with the problems of live stock and poultry owners; cultivate wider business and social acquaintance and thus bring greater opportunities for giving better service; cooperate with federal, provincial, state and local veterinary officials in the prevention, control and repression of transmissible diseases; with these and other officials in meat and milk hygiene work; and make himself the connecting link between regulatory officials and live stock and poultry owners. In this way he can be a help to both as well as to himself.

The veterinarian who is not qualified and willing to render a service as outlined above has no right to complain if it is sought from other sources.

General Discussion

We have endeavored to describe the fields of agricultural extension, regulatory service and veterinary practice. All exist for the purpose of rendering a necessary service for live stock and poultry improvement. It would be difficult to establish a

distinct line of demarcation between the three. The fact that certain phases of their work interlock and are interdependent makes it the more evident that they should function agreeably together.

The United States Chamber of Commerce has adopted fifteen principles of business, the first of which is:

> "The foundation of business is confidence which springs from integrity, fair dealing, efficient service and mutual benefit."

As long as agricultural and veterinary colleges, national, state and local veterinary and regulatory organizations view with skepticism the true purpose and integrity of the other and witness the attempt to place them in a formidable position without a true sense of bettering that for which they are working, just so long will the existing friction continue and become a fixed barrier to the rendering of a true service and a stumbling-block to progress.

Responsibility for existing conditions in the fields of agricultural extension, regulatory service and veterinary practice rests mainly with the leaders who have formulated the policies and have directed the work. The attitude and work of county agents, regulatory field men and veterinary practitioners in most instances but reflect the impressions received from their instructions, superiors and other sources. Poorly directed extension men are what they are because agricultural extension directors permit and farmers encourage them to be so. When a child misbehaves, we very promptly blame the parent—not the child.

One Can Help the Other

A properly directed county agent can do as much, if not more, for the veterinary practitioner than any other individual factor. On the other hand, the practitioner can also be of inestimable value to the work of the county agent. The right type of man performing regulatory work can do much to assist the extension man, also the practicing veterinarian. Furthermore, the practitioner and the extension man can contribute materially in helping the regulatory official. The trouble has been that we have been negligent in trying to relieve this discrepancy at the point where it would do the most good, which has very often reacted to the detriment of the profession.

A practitioner from one of our central counties, after administering to a sick animal on the premise of a client, was questioned about plant parasites. He informed the farmer that he (the

practitioner) was not the man to tell what they were but was quite certain the county agent could do so. So the veterinarian took specimens from the owner's farm to the Farm Bureau office for examination. What happened? The county agent had been trying to get in touch with the veterinarian with a similar purpose in mind. The day before, the county agent had been asked to recommend treatment for some sick hogs. He told the farmer he knew nothing about treating sick hogs but would get in touch with the local veterinarian and have him come out. This actual happening points out one of many instances where the desire on the part of both to help the other results in mutual benefit.

A county agent who presumes to practice veterinary medicine or attempts to teach farmers to do so can scarcely hope to be on good terms with and receive full support of veterinarians. The regulatory official who attempts to practice outside of devising methods of improving live stock and poultry, prevention, control and eradication of transmissible animal and poultry diseases, and milk and meat hygiene, likewise becomes a trespasser and can not hope to maintain the good will and receive the unstinted support of veterinary practitioners. The veterinary practitioner who holds aloof from, neglects taking interest in and fails to support or perhaps occasionally knocks the work of the county agent and the regulatory official, can not hope to be at peace with and have the cooperation of the last-mentioned two agencies. Our instinct is to retaliate—strike back, but retaliation never does any good. Agricultural extension, regulatory service and veterinary practice are inseparable and indispensable to one another. They constitute a big family. And, a house divided against itself can not stand.

The Personal Equation

In every sort of occupation the personal equation can not be ignored. There is need of sympathy between the human factors; there is room for the amenities, and colleagues ought to be friends. But the thing to be done is impersonal and it has no time to waste on the idiosyncrasies of those engaged in doing it. In every task that engages human collaborators the man who is too sensitive for his own "rights" and too ready to discover grievances is a detriment, and all concerned would go farther and faster without him.

Personal contact is essential to complete understanding.

Therefore, occasional conferences and full understanding between the director of agricultural extension and the director of live stock and poultry regulatory work in each state are necessary if the best results are to be obtained and harmony is to prevail. A working program and policy for the guidance of each institution is essential and will better enable each agency to render prompt, efficient and economic service. The live stock and poultry regulatory program and policy should include the services of the practicing veterinarians of the state. Moreover, the holding of occasional conferences with the deans of veterinary schools and practicing veterinarians, for the purpose of establishing complete mutual understanding is time well spent on the part of agricultural extension and regulatory service directors.

If a better understanding and closer relationship are to prevail between agricultural and veterinary college graduates, there must of necessity first be established a similar relationship between those who would direct such institutions. If neighboring parents are not on friendly terms one would not expect their children to play amicably. For, after all, confidence begets confidence. The best way to make and maintain friends is for all to be honest and friendly. The man who carries a pistol usually finds something at which to shoot and often is injured or killed by the other fellow.

Examples of Cooperation

The following are a few instances in which cooperation among the three agencies is not only desirable but essential to the best interests of stockmen, poultrymen and the public.

The agricultural man should endeavor to aid animal and poultry owners in thoroughly understanding the services which the veterinary practitioner and the regulatory official are capable of rendering him. He should advise farmers to look to the veterinary practitioner and to the regulatory official for help whenever these agencies are the proper ones to consult in the solution of his (farmer's) problem. The practitioner should endeavor to keep the agricultural extension service informed of the general state of health of the live stock and poultry in the community as he observes it, and especially at such time when the activities of the estension service might help to bring about better health conditions on the farms. A close contact with the county agents and the agricultural extension program which is being developed, particularly along live stock and poultry lines, will

be of immeasurable benefit to the practicing veterinarian.

The regulatory official should keep the agricultural extension service informed of all live stock and poultry sanitary laws, regulations, quarantines, etc., that are in force, as well as the aims, objects and methods which will be employed in carrying them out. The agricultural extension service should help stockmen, poultrymen and the public to understand the aims and reasons for regulatory measures and keep regulatory officials informed as to the general attitude of stockmen and poultrymen toward them. Agricultural extension, in cooperation with regulatory service and veterinary practice, should act in an advisory capacity to assist stockmen and poultrymen in the forming of such organizations as will be of best help and most benefit.

The three agencies under discussion are not unlike the three outfielders on a baseball team. If the center fielder, whom we shall call "Agricultural Extension," should, in his eagerness and enthusiasm, occasionally get over into left field occupied by "Veterinary Practice," or into right field played by "Regulatory Service," to take a play, little if any notice would be taken or harm result, provided said center fielder (Agricultural Extension) recognizes and admits he was trespassing on the territory of his fellow player. The same applies to the other outfielders (Veterinary Practice and Regulatory Service). If, however, the center fielder (Agricultural Extension) or any other player on the team persists in crossing into the territory of his fellow players and thus fails to recognize and respect the ability and rights of his teammates, trouble will surely follow, and the results will be reflected proportionately in the success and standing of the team.

Get Closer Together

Instructors at agricultural and veterinary educational institutions and regulatory officials should become better acquainted with and get closer to one another. Each should be familiar with the purpose and duties of the other. So long as leaders and instructors in agriculture and directors of agricultural extension make a distinction against veterinary education and practice, just so long will the same feeling be given agricultural college graduates, and thus will the prevailing friction continue to exist between agricultural extension, regulatory service and veterinary practice.

There is a tendency in this country to subordinate the veteri-

nary service to administration and leadership outside of the veterinary profession. During the World War, in the British Empire, France, Germany and other European countries, the army veterinary activities were discussed by men trained in veterinary science, while in this country the service was directed by a man of the medical profession. In some states regulatory veterinary activities are directly in charge of laymen. In fact, some agricultural administrators and educators venture so far as to attempt to formulate the policies and take over the actual directing of the veterinary service. If the veterinary profession is to be maintained at a high standard, the education of veterinarians and regulatory service work should be under the direct leadership of men of the veterinary profession, which contains as high a percentage of members possessing teaching and administrative ability as does the agricultural and medical professions or any other group or class of workers.

The Case of Napoleon

During his exile at St. Helena, Napoleon is reported to have said, "If I had taken a course in leadership I should not have landed here."

Too many of our so-called leaders desire to please rather than to give sound advice. What we need is more leaders who do straight thinking and who are not afraid to advocate what they know to be right; and the A. V. M. A. has no more important work than to encourage and develop such leadership.

I do not hold the view and do not wish to convey the impression that agricultural extension has caused all of the existing troubles. Regulatory officials and veterinary practitioners also have been at fault and must assume a share of the responsibility.

Some veterinarians should get the notion out of their heads that what they do is right and what others do is wrong. Our profession is not without its demagogues who advocate special privileges for the practicing branch of veterinary medicine. The adoption of their principles would tend to undermine and eventually divide our profession and result in unionizing its associations like labor organizations. Our practitioners as a whole are trained, honest, fair-minded and industrious men. As such they expect and are entitled to an equal opportunity both with those with whom they work and those whom they serve. Practitioners are not seeking special favors from any source, nor do they ask

unfair advantages. They want to be free to follow honest, prudent leaders who as such are free to lead.

Too much free public service is economically unsound. Speaking before the American Bar Association, Attorney-General Benton, of Massachusetts, uttered a warning against centralization in government and federal aid legislation. Such legislation, Mr. Benton stated, "began with appropriations for Agricultural Colleges. It was then applied to vocational education and more recently to maternity and child welfare. There are now or have been recently pending in Congress bills to establish a Department of Public Welfare and to appropriate as much as $100,000,000 a year to those states which give equal amounts for the purpose of controlling the whole subject of education," all of which is, asserted Mr. Benton, "an ingenious device by which Congress appropriates money for purposes specified to those states which themselves appropriate equal amounts. This operates as a bribe to a state to cooperate with Congress along lines prescribed by federal bureaus."

Free governmental service should be curtailed rather than extended. The public should employ and rely more upon local talent for service. Such service should be paid from private rather than from public funds. Many farmers have the idea that they are getting something for nothing when county, state, provincial or federal inspectors tuberculin test their herds or county agents vaccinate their hogs, or when these agencies perform other work. So-called "free service" comes from public taxation and is usually expensive.

Divided Responsibility A Cause

Much of the friction between practicing veterinarians and county agents, also county veterinarians, is due to divided jurisdiction and responsibility over the last-mentioned two groups.

Agricultural extension should be under state agricultural college control. County agents should be selected and directed by the director of agricultural extension at the state college. Likewise all live stock and poultry regulatory work should be under state control. County veterinarians should be selected and directed by the state live stock regulatory official, who should be a veterinarian, and free from agricultural domination. Practicing veterinarians, being independent units, can not and should not be directed from a central point for the reason that they

function mostly by and are responsible only to themselves and their clientele. There cooperation, however, is essential.

Practitioners recognize the advantage of prudent leadership. This fact is splendidly illustrated in a number of states where the practitioners are ably guided by far-sighted leaders. In such states the friction herein discussed is reduced to the minimum if it exists at all.

Agricultural extension, regulatory service and veterinary practice, being a cooperative service which is indispensable to a successful live stock and poultry industry, are essentially obliged to strive to cooperate truly with one another and get along. The fact can not be denied that agricultural extension can function without the aid of either veterinary practice or regulatory service, also that veterinary practice could get along without either or both regulatory service and agricultural extension. Moreover, no one disputes the fact that the live stock and poultry industries could exist without the services of all three insitutions. But that is not the question.

The point is that these two industries and the general public can get along to better advantage with than without the three institutions. Furthermore, each of the institutions can function to better advantage with the aid of the other, and as each thus functions better they jointly and individually benefit proportionately.

The truth in the foregoing statements indicates that it is our duty to take action necessary to ascertain the cause of the existing relations between agricultural extension, regulatory service and veterinary practice and to make provision for administering the proper treatment.

A Serious Situation

The purpose of this paper, as previously pointed out, is to bring briefly to the attention of the members of the American Veterinary Medical Association a situation which is considered serious.

Time will not permit and the speaker is not sufficiently equipped to furnish all facts responsible for the existing unsatisfactory situation. The conflict has advanced too far for you and me individually to accomplish much. Individual effort would avail little in the way of ironing out the differences.

Whatever is done in the interest of the veterinary profession should be under the direction of the A. V. M. A. and the guidance

of the best minds and leadership our profession can produce. This Association can and should provide the means necessary to go to the root of the trouble, ascertain the cause and decide the steps necessary to bring about a satisfactory adjustment of same.

Your Executive Board pointed the way at Montreal last year when it recommended the adoption, by the American Veterinary Medical Association, of a definite policy setting forth its purpose and containing recommendations pertaining to the important subjects of Agricultural Extension, Regulatory Service, Veterinary Biologics, Veterinary Education, Legislation, Public Health, Publicity, Preventive Medicine, Allied Organizations and Humane Measures.

To adopt the proposed policy this year and to follow the principles contained therein will do more for the veterinary profession and especially for the general practitioner than almost any other proposition that has been proposed in recent years. Having adopted this policy, the Committee on Policy thus created will be available and in the position as an official agency to cause the necessary investigations and recommendations to bring about the proper understanding and a harmonious working arrangement.

If the 1924 annual meeting of the American Veterinary Medical Association does no more than to adopt the proposed policy, it will have accomplished something truly worth while and will be recorded as a genuine epoch-making meeting.

KANSAS FOURTH ANNUAL CONFERENCE

Dean Dykstra has announced the combined program for the twenty-first annual meeting of the Kansas veterinary Medical Association and the fourth annual conference of Kansas Veterinarians, to be held at the Kansas State Agricultural College, Manhattan, Kansas, February, 4-5-6, 1925.

Among the nationally prominent veterinarians who will contribute to the program are: Dr. L. A. Merillat, president of the A. V. M. A.; Dr. John W. Adams, of the University of Pennsylvania; Dr. Maurice C. Hall, of the U. S. B. A. I.; Dr. N. S. Mayo, ex-secretary of the A. V. M. A.; and Major R. J. Foster, of the U. S. Army.

Members of the Veterinary Faculty of the K. S. A. C., as well as many of the Kansas practitioners, will discuss important problems of current interest. A clinic has been arranged for the afternoon of the third day.

THE SURGERY OF THE FEET OF CATTLE[1]

By T. H. FERGUSON, *Lake Geneva, Wis.*

While the diseases of the claws in cattle show a general resemblance to diseases of the hoof of the horse, they have many characteristics of their own, due to the duplicate formation of the hoofs or claws; to the union of these by ligaments and soft structures; and to the absence of the frog, bars and lateral cartilages. The peculiar structural arrangement of the feet predisposes the soft structures of the claws to injury and, as the sole of the claw carries the major portion of the weight, bruises of that structure often occur.

CAUSES

The keeping of cattle, especially heavy ones, confined in stalls with hard floors or in filthy-bottomed, loose stalls or yards, lack of exercise, neglect in trimming the claws, confinement in yards that are paved with loose cinders, contact with irritating substances that are sometimes used on stable floors, rough gravel or stony lanes or roads that cattle are required to travel over, to and from pasture, certain soils at certain times of the year, continuous wet weather, wet slough pastures, wire grass, fungi, molds and rusts that form on clover, rape and other grasses, stubble pricks, bruises and injuries, of any part of the claw, are some of the influencing conditions that predispose to foot diseases.

The most common cause of foot diseases in cattle is dirt irritation, aside from laminitis, corns, bruises caused by continuous standing on hard floors, over-growth of the wall and sole, driving over hard roads and accidental wounds.

The predisposing causes mentioned irritate and lower the vitality of the soft structures, rendering them very susceptible to the action of micro-organisms that exist in the dirt and filth that may become impacted between the claws or accumulate around them.

Wounds that would be trivial on other parts of the body are always prone to become serious in any part of the bovine foot and unless noticed early and given proper treatment are apt to result disastrously. As filth plays such an important role in causing diseases of the feet, its opposite—cleanliness—is of the utmost importance in the treatment of all foot affections.

[1]Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

Symptoms

The symptoms of foot diseases of cattle vary, according to their severity. In the milder forms and in the early stages of the severe affections, there is little evidence of pain, just slight lameness, soreness and perhaps a redness or swelling of the coronary band, interdigital membrane or the connective tissue just above the cleft and usually a drop in the milk secretion of the cow. A careful examination at this stage may reveal a punctured wound or bruise or other condition that will respond readily to treatment, but if neglected will progress into a serious state.

If the tissues of the toe are affected and the pain is not too serious, some weight will be placed on the bulbs of the heel. If the bulb is affected some weight will be borne by the toe, during a portion of the stride.

In severe cases there is lameness, loss of appetite, fever, increased respiration, congestion of the visible mucous membranes, marked pain with redness and swelling of the soft structures of the foot. The swelling in some cases extends nearly to the hock or knee. Gangrene of the soft structures, abscess or open joint may be present. The animal often remains recumbent; this favors bed-sores, predisposes to mastitis (in the cow) and metastatic inflammation of some of the other joints of the limbs. If the patient is forced to stand the diseased foot is held up. It swings from the body. If made to move, the animal groans and does not even attempt to place weight on the affected member.

The claws of the hind feet, being weaker than those of the front, are more often diseased and the inner one more often than the outer.

Course

The milder forms of foot diseases respond promptly to proper treatment and handling. Their course is short, usually a week or ten days' duration. A large percentage of the more severe forms are amenable to proper treatment if treatment is begun early in the course of the disease and carried out religiously. The course varies from three weeks to several months, depending on the exact nature of the trouble; canker, for example, often persisting for several months.

Prognosis

As a general proposition, the prognosis is favorable in foot diseases, provided they are properly treated and cared for.

However, one must be guided by the degree of pain and the existent changes with reference to prognosis. Where two or more feet are attacked at the same time by necrosis of the tendons, ligaments and synovial membranes, there is little chance for recovery of the affected animal.

The following are some of the foot diseases of cattle: coronitis, interdigital dermatitis, bulbitis, laminitis, bruises, corns, abscesses, penetrant and other wounds of the soft tissues, skin gangrene, bone necrosis, acute septic arthritis, diffuse septic cellulitis, necrotic ligamentitis, necrotic tendinitis, septic bursitis, canker of the bulb and sole, fibroma of the interdigital tissues, and warts.

Foot Rot

As many of this class of foot diseases are apt to develop during the course of a disease, known by the name of foot rot, felon and paronychia or whitlow of the claw, a short description of this condition is appropriate here. Foot rot is an acute, suppurative inflammation of the feet or claws of cattle, attended by more or less necrosis, which may start at any part of the claw, and has a decided tendency toward progressive invasion of adjacent tissues. It is always caused by some infecting micro-organism, which gains entrance through abrasions, scratches or other injuries of some part of the foot; and as it is essentially due to infection, a number of the animals in the same herd exposed to the same conditions may be affected at the same time.

Any irritation of the soft structures of the feet from causes heretofore mentioned predisposes to foot rot and if not noticed early, and handled properly, the parts become infected and destruction of tissue begins.

Among the early symptoms of foot rot are pain, fever, loss of appetite, stoppage of milk secretion and lameness. An inflammatory swelling appears, with or without any visible external injury, involving either the interdigital membranes, bulbs of the heel or coronet. The affected tissues are swollen and painful to the touch. When made to move, the subject avoids placing weight on the foot as much as possible. In a few days, separation occurs at the coronet and a thick, fluid pus is discharged or the skin between the claws breaks, thus providing drainage for pus. If the interdigital ligament is ruptured, the claws become abnormally separated.

If the bulb is affected, the infectious inflammation usually extends from the sensitive parts of the bulb to the connective

and fatty tissue that lies above, and thence to the flexor tendons and pedal joint, causing necrosis of the tendons and septic inflammation of their sheaths, or it may attack the interdigital ligament or the internal or external ligaments that unite the os pedis to the os coronae and os suffraginis, causing necrosis of these structures.

The cause of foot rot depends on the virulence and extent of the infection, the time when treatment is initiated, and the kind of treatment applied. If the infection is of a moderate form and confined to the more superficial structures; if it receives proper treatment early, recovery takes place in two, three or four weeks. If the infection is of a very virulent form and the deeper structures are affected, treatment tardy, surroundings bad or more than one foot is affected, the subject usually dies of septicemia in a few days. In any such case, where recovery takes place, it is after several weeks of suffering. This condition may be prevented by cleaning all sore feet and treating wounds and injuries antiseptically. Cleanliness is the one important factor in preventing foot rot. Animals with slightly sore or infected feet should never be exposed to the infection of mud holes or filthy stables or barn-yards. Overgrown claws should be treated until sound.

Treatment

If the sole or wall is underrun with pus or is loosened, remove over the affected part. Where a large area is diseased and possibly a new wall is started be careful and not injure the same. Trim the entire claw until it is smaller than its mate. After trimming the wound, apply Lugol's solution of iodin or etherized iodin. Pack the abscesses with wicks soaked in either of the iodin preparations, dust the parts with an astringent dusting powder, cover with tar, oakum, cotton and bandage. In mild cases the dressing may be left on for several days if the bandages are soaked in tar or electric tape used to cover bandages. Severe cases of necrosis of the superficial tissues and septic cellulitis are best handled by first cleansing the feet with soap and water, applying cotton between and around the claw, bandaging and keeping the parts moist for several days with a mixture of formalin 3 parts, phenol 5 parts and water 100 parts, applied several times daily with a syringe.

When, as a result of any disease or injured condition of the foot, necrosis of the flexor tendons, or a purulent inflammation

of the pedal or coronary joint, or necrosis of the os pedis, os coronae or os suffraginis occurs, amputation of the affected claw is indicated and will come as near getting 100% good results as any operation that is done in veterinary practice. It gives immediate relief to the suffering animal, starts it on the road to a rapid recovery and is very gratifying to the owner or herdsman, who watches for improvement of the animal's condition.

Anatomy of the Foot

The claw of a bovine animal consists of a horny wall, a coronary band and a horny sole, with bulbs similar to those of the horse's heel. In large-sized cattle, the outer horny wall is about one-fourth of an inch thick, the inner horny wall about one-half the thickness of the outer, and the horny sole one-fourth of an inch thick, reaching from the toe to the posterior third of the ground surface of the claw, where it becomes continuous with the wall. Above the wall and between it and the tendon of the flexor pedis perforans, is a mass of firm connective tissue which to some extent corresponds to the fibro-fatty frog and contains a large quantity of fat. The pedal joint lies near the center, between the toe and ball of the foot, its middle point being somewhat nearer the toe than the wall and about three-fourths of an inch below the coronary border of the wall. A straight line, drawn obliquely from the interdigital space to the termination of the horny sole in the wall, would nearly coincide with the lower border of the joint.

The coronary joint is about three-fourths of an inch above the coronary border of the wall. The fetlock joint can be palpated easily. In each claw the tendon of the flexor pedis perforans forms, with the navicular bone, close in front of the insertion into the os pedis, a bursa which corresponds to the bursa podotrochlearis of the horse. This lies over the posterior part of the horny sole, about the point where it becomes continuous with the bulb of the heel.

The sensitive wall and sole differ little from the corresponding portions of the horse's hoof, although the coronary band is broader and reaches downward almost to the middle of the horny wall. Between the claws the coronary band becomes continuous with the skin, which is hairless and covered with a thick, slightly horny epidermis. Above this, between the coronet bones, lies a large pad of fat which is continued downward under the inner wall and assists the movement of the claws over one

another. The os pedis is united to the os coronae and os suffraginis by two internal and external ligaments and through the former to the reinforcing band of the extensor pedis.

The cruciform or superior interdigital ligaments unite the two claws above and prevent their being spread too far apart. The inferior interdigital ligaments, lying above the interdigital space, unite the coronet bones and pass through the fatty cushion of the bulbs of the heel and lose themselves in the sensitive sole.

The following are the instruments and dressings useful in performing the operation. If it is done at the pedal articulation, all of them will not be used. If performed higher up, they will be necessary, and it is always better to have too many than too few. Scalpel, probe-pointed bistoury, double-edged sage-knife or sharp-pointed seton-needle, artery, vulsellum and dissecting forceps, scissors, probe, curette or bone spoon, needles and suturing material, tourniquet, hoof-knife, half-round rasp, bone-saw, gauze bandages, oakum or cotton, 2 pint cans of pine tar, cocain solution, tincture of iodin, liquor cresolis compositus, warm water, soap, brush and razor. Sterilize the instruments by boiling or otherwise.

Operative Procedure

After preparing a clean, soft bed of straw or other bedding material, cast the animal with the affected claw uppermost. Fasten the head securely in a comfortable position. Protect the eyes, face and horns from injury and stretch the animal between two rings or posts in tieing the front legs to one and the hind legs to the opposite one. Tie the tail to a leg or where it will not interfere with the operation. Clean the leg and affected foot thoroughly with soap and water. Then disinfect the parts. Block the nerves above the fetlock on both sides by injecting a small amount of a four per cent solution of cocain, to which two or three drops of adrenalin chlorid have been added. Over them apply a tourniquet above the ankle. Rasp the horn over the wall of the affected claw, especially the outer and posterior parts, until it is very thin, like paper. Clean the foot once more and disinfect with a 50 per cent solution of iodin.

Locate the pedal joint, which is about three-fourths of an inch below the coronary border. Moving the toe back and forth with one hand, while feeling with the fingers of the other, will determine the exact location of its center. At this point push the sage-knife or seton-needle into the joint with its concavity toward the fetlock

and make a curved incision forward, upward and outward, near the coronary band, to the interdigital space. A second curved incision backward and upward to the navicular bone is continued downward at a right angle between the os naviculare and os pedis. By pressing the toe downward and backward, while making this incision, the pedal joint is opened, and the interdigital ligaments and inner wall of the claw may be cut through.

With a knife, scissors or curette, remove every vestige of necrosed tissue; ream out any fistulous tracts, and remove the articular cartilage from the os coronae and os naviculare with curette or bone-spoon. Ligate the blood vessels; apply a 50% solution of iodin to the denuded surface, and cover with a pledget of oakum or cotton soaked in tar. Over all wrap a tarred bandage, which should extend above the ankle and which may be left on for fifteen to twenty days if there is no sign of discomfort or suppuration.

If necrosis has extended to the coronary joint, remove the os coronae. If the lower end of the os suffraginis is involved, lay back a flap of skin and saw through this bone, in an oblique direction, from above downward. Ligate the bleeding vessels, trim the flap of skin to fit, and suture below the stump. Use the same dressing as for the pedal joint operation.

The animal experiences immediate relief after these operations and usually makes a rapid recovery and can get around on the claw that is left in very good shape. Walking does not bother in the least. At the trot or run they have a hop. Cows that have been off feed, with an almost complete cessation of milk secretion, immediately regain their appetites and gradually come up on milk flow, while feeders gain flesh rapidly.

Discussion

Dr. J. N. Frost: There is one thing that Dr. Ferguson did not mention in connection with the trimming of claws, a thing that has been neglected, particularly in show animals—the trimming of the claws of the hind feet. It is one of the great things that help to cause a poor top-line in a show animal, especially in a dairy cow, the failure to have the hind feet properly trimmed.

Then there is one other point that Dr. Ferguson did not mention in connection with hoof rot, and that is as a preventive measure. We have found we can do a great deal in preventing foot rot, especially in cattle that are coming into the stable daily to be milked, simply by having those cows walk through a lime bath. It is a simple matter; it doesn't cost much and saves plenty of money. You simply arrange a low box in front of the door, wide enough so that, when a cow walks across, every foot has to be placed in that box, and then put in two or three inches of dry lime; every time the cow goes in and out, she disinfects her feet. Of course, there will be times when there is mud on her feet, but for all of that, you get a sufficient disinfection there, so that you go a long way toward preventing foot rot, and it is well worth while doing. In fact, in a number of herds where we are using this method, it has practically eliminated foot rot. In herds where the animals

travel through low, swampy grounds, in getting to or from the pasture, it has practically eliminated the trouble, where before it was almost a continual process on these farms to have a case of foot rot in one or two or three, but simply by disinfecting those feet as the animal passes through that bath of lime, it does away with a large amount of the infection and the trouble. Of course, with nail pricks and things of that kind as a starting point, it wouldn't eliminate it.

Then there is another thing I think should be emphasized in Dr. Ferguson's paper, and that is bandaging the foot when you have infection between the claws. With the foot that isn't bandaged, when the cow places that foot in contact with the ground, places weight upon that foot, even though it is only a small amount of weight, there is a tendency for the claws to separate. The weight is more or less upon those interdigital ligaments, which are probably sore, at least, if not diseased, and at the same time the separation of those claws separates the wound and causes an irritation of that wound. Now, by putting the dressing in there, as Dr. Fergusson has described, and putting a bandage around those claws to stop that movement, it goes a long way toward relieving the pain, and it certainly hastens the recovery.

Now, as a dressing for foot rot, in place of the liquid dressing, I have come to believe that I get better results by keeping those things dry, cleaning them out and then keeping them dry, and I use practically the same dressing that Dr. Ferguson has described except, instead of using a watery solution, I mix two pounds of vaselin with an ounce of carbolic acid, half an ounce of formalin, and two ounces of spirits of camphor, and use that as a dressing in place of the wet solution, and I have made myself, at least, believe that I get better results.

I might say, in the amputation of those claws, I have followed pretty closely the second operation that Dr. Ferguson described. It is much more rapid; it doesn't look quite so well, perhaps, from a surgical standpoint, but it is much more rapid, it is easier to do, and the results are just exactly as good, so far as I can see.

There is one thing that we do that he didn't describe. In amputating that claw with a saw, we generally take a small piece of an inch board and put it in between the claws, then saw down on that to remove the claw, and it comes off much more quickly.

As a dressing in those cases, I have relied, lately, entirely upon chlorazene for any of those foot operations, whether it is a claw of a cow or the resection of the flexor pedis in the horse's foot. I first use a small amount of boric acid, then a chlorazene pack; I use plenty of chlorazene pack, but cover that up with dry cotton and a dry pack over it, so that the chlorazene doesn't all evaporate in an hour or so; keep it there for a long time, and in that way you get the chlorazene in contact with that wound for a much longer period of time.

Dr. Ferguson: Dr. Frost has brought out some excellent points relative to preventive measures; dressings that are useful in foot rot, both before and after operating. I agree with the Doctor that the amputation of the claw, when the pedal joint is diseased, is accomplished much easier with the saw, and the results are just as good. If, however, the coronary joint is affected, it is necessary to remove the os coronae, and I believe it can be done best with a knife, as it is essential to save all the coronary band possible. If one finds that the distal end of the os suffraginis is diseased, it will be necessary to make a flap and remove the diseased part with a saw. When the flexor tendon is necrotic, divide it above the diseased part, preferably at the ankle, and remove the necrotic portion.

It Comes High

Teacher: "Johnny, your conduct is outrageous. I will have to consult your father."

Johnny: "Better not, teacher—it will cost you two dollars. He's a doctor."

ANIMAL DISEASE CONTROL[1]

By R. C. JULIEN

State Veterianarian, Indianapolis, Indiana.

When your good Chairman requested me to assist in filling part of the program of this Section, I accepted the invitation reluctantly, fully realizing my inability to bring to you anything new or valuable. Therefore, in the beginning, permit me to say that I have no new or fanciful ideas to present, and if I can cause someone to reflect and put into practice the things which we already know, then my effort and time will not have been in vain.

Animal disease control is, in my opinion, one of the greatest questions confronting the live stock industry, and all those responsible for the enforcement of regulatory measures.

Proper sanitary measures, religiously applied and carried out, are perhaps the best weapon known for the control and eradication of contagious and infectious diseases of animals, but such measures will not alone suffice—they would, however, prevent the outbreak and dissemination of many diseases and unthrifty conditions, for it is well known that most, if not all, disease-producing organisms live in filth and improperly constructed, poorly ventilated and undrained buildings, sheds, feeding-lots, etc.

If we are to prevent the spread of disease we must first correct conditions, which are, or at least have a tendency to be, responsible for its origin. Nature's tendency is ever toward perfect health, and it is usually when the animals' vitality has been lowered by improper breeding, feeding, or management that disease develops.

Much progress has been made in the last decade, but until the live stock owner, and all those interested in live stock production and marketing are educated to the necessity of careful sanitary measures, in all its ramifications, we may well expect great losses from disease.

The sale and movement of diseased or exposed animals is a prolific source of setting up new centers of infection, and the movement of contaminated feed and food products very often causes outbreaks of disease in distant localities. Foot-and-

[1]Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

mouth disease, hog cholera, anthrax and many others are often distributed through these channels.

The immediate and proper disposal of dead carcasses is an important factor, and one not to be forgotten. No one has the moral right, and most certainly should not have the legal right, to leave such carcasses to be devoured by other animals, birds and Nature's elements.

All too often outbreaks of disease can be traced to infected stock cars, trucks, and other common carriers, and so long as our present system of marketing is maintained we will have great losses from this source. Public stockyards are infected places and all animals passing through them are more or less exposed, and so long as live stock is sold for feeding and breeding purposes from such yards we will have considerable losses, as well as new centers of infection.

Ponds, creeks, and open streams are not to be neglected in disease control, as in many cases they are found to be the means by which disease is spread.

Early Diagnosis Important

An early and proper diagnosis is of prime importance in all disease-control work, and renders quarantine measures more valuable and effective. A late diagnosis is often the cause of unnecessary and unwarranted losses and an improper one may give quite the same result, for to subject animals to a certain biological product, which is not indicated or not of known value, often brings the veterinarian into disrepute and the entire profession, as well as the live stock industry, suffers.

In recent years there have been introduced many different kinds and combinations of biological products, which have found their way upon the market. Great and fanciful claims have been prematurely made for them, and in some localities the veterinary profession has been placed upon a strictly commercial basis—the practitioner losing confidence in his own ability and forgetting that first of all a correct diagnosis is of prime importance.

The improper and careless use of virulent and other biological products is responsible for no little loss to the live stock industry, and the practice of laymen using such products cannot be said to be an economically sound one, and the careless use of the same by those supposed to be properly equipped and educated is little less than criminal.

The failure to identify properly and slaughter known diseased animals is to be condemned, and the practice of retesting reactor cattle is unjust, unwarranted, and serves only to palliate an evil and bring veterinary science and disease control into disrepute.

No system of disease control will be efficient and effective until closer supervision is given each county, or group of counties, and in creating such a system a place must be made for the individual practitioner and strict civil service should be put into practice in every state. No official or employe should be subservient to any political faction or group. Honest effort and efficient service should be the prime qualification for employment and advancement.

The authority directing such a system must be vested in the several state and government officials. Fighting disease is not unlike war and requires generals and directing officers. It is a national problem and all those interested and engaged in it should be loyal to the cause.

Education vs Legal Regulation

Proper education, coupled with good sanitation, will be of greater and more lasting value than all the laws and regulations put together, for no regulation is stronger than the public sentiment back of it. In promulgating regulations due consideration must be given to all interests, ever having in mind the protection of the health of the live stock industry with least restrictions.

In requiring the use of certain diagnostic or immunizing agents, their efficacy must first be thoroughly established before permitting their use. More uniform regulations governing the introduction of live stock within the several states might very profitably be worked out.

In all disease-control and eradication projects, every known and tried method should be employed. We are by nature imitators, but it will not alone suffice to be satisfied with the present, nor build for the future, out of the experiences and records of the past. Our success or failure will be measured by the thoroughness and effectiveness of the work, rather than by volume and careless supervision.

In conclusion, let us not forget that education means knowledge and that knowledge is power, and that if we work upon metal it will tarnish, if we work upon stone it will in time crumble and fall—but if we work upon human minds and characters, instilling into them just principles and knowledge, we will then be working

upon that which the elements will not destroy, and no time will efface,but which will grow brighter and brighter each succeeding generation.

Discussion

Dr. C. E. Cotton: I dislike to see this paper go by without any discussion. I think that the author should be congratulated on covering the subject so thoroughly. We should at least coincide with the statements he has made relative to the necessity of cleaning, disinfecting and sanitary methods. We are all inclined to depend too much on the use of the hypodermic syringe and doses of bacterins or vaccines to prevent diseases, or to cure them after we have them, and we are forgetting the basic principles of disease control.

Dr. J. I. Gibson: I want to sanction what he has said along the lines of sanitation. Most of you gentlemen will remember that after the general sanitary methods which were practiced at the time of our last widespread outbreak of foot-and-mouth disease, for a time we were comparatively free from animal disease in the territory where the sanitation was practiced. There were the public stockyards, the market places, the railroad yards at the various stations, the stock cars, which were all cleaned and disinfected. We started clean and for a term of years kept clean. There was no mistake about the visible results, but what have we done along these lines since that time? Practically nothing!

I claim that the public stockyards and the market places should be cleaned and disinfected thoroughly—much oftener than they are—although the stockyards officials are about the only people who are practicing any cleaning and disinfection in the country.

There are the railroad pens at every station, which are insanitary—reeking with infection and filth—so that the farmer who brings in any live stock to the farm, in the shape of grazing or feeding live stock, is taking great chances of getting infection. That same stock which he takes to the station is placed in a very filthy car, which is reeking with infection of various kinds, and so it goes.

There was a time when we had published, in the state of Iowa, requirements that all of the railroad pens in the state should be made sanitary, properly drained, and cleaned and disinfected between April 15th and May 15th of every year, and at such other times as the Animal Health Commission might deem advisable.

We also had regulations requiring that all animals for distribution upon the farms in Iowa were to come through sanitary, clean yards, and shipped in cleaned and disinfected cars. The Dominion north of us unquestionably has the greatest sanitary regulation known, and that is the universal disinfection of stock cars. That, I think, is worth more than all the regulations which they may attempt to put over in the control of animal diseases, and I am wondering why the American Veterinary Medical Association does not take a stronger stand in favor of this practical sanitation, cleaning and disinfection of all the public places, especially where live stock that is going to the farm must be handled, to see that they do not carry infectious diseases to the farms all over the country. It has been proved over and over that feeding cattle, shipped in filthy, infected cars, have taken diseases. Hog cholera especially has been carried in that way, and I think it is time that this Association should take a stronger stand for real, practical live stock sanitation.

Dr. Kiernan: I do not think that they are neglecting the disinfection of cars containing infected animals—animals infected with various diseases. In the southern states, for many years, all cattle shipped interstate, from a particular infested area to points north of the quarantine line, had to be cleaned and disinfected.

I agree with Dr. Gibson that there is not a universal practice of disinfecting cars, that have carried live stock interstate, at periodic intervals. Whether that can be put into effect or not is a matter for consideration and for future effort.

Dr. Malcolm: I noticed, in Dr. Gibson's remarks, that he said that some time ago the state of Iowa required the cleaning of stockyards at periodic

intervals. I do not want the impression to go out that this condition does not now exist in Iowa, because the stockyards people are required to clean and disinfect their stockyards at least once a year, or whenever the Secretary of Agriculture, through his Chief of the Division of Animal Industry, requires them to do it.

We have gone one step farther in that line, with a ruling that when a car is shipped to a central market and it is known to have been exposed to any disease of a contagious nature, that car must be cleaned and disinfected before it leaves the yard. So that we feel, in the state of Iowa, that we are not neglecting sanitation from that standpoint, and we cooperate with the federal department in taking care of the sanitary situation in the handling and shipment of any cars that have held infected animals. I will agree with Dr. Gibson, that there may be some places in the central markets that have been neglected, but we have a ruling requiring that before live stock can be shipped into the state of Iowa the car must be cleaned and disinfected before it is loaded.

DR. H. A. WILSON: I would like to ask who superintends the disinfection of these yards and cars?

DR. MALCOLM: When a car goes into a market where there is federal inspection maintained, it is the duty of the federal inspector to see that our rules and regulations are lived up to before the car is permitted to go out.

When we put our stockyards under quarantine, on account of shipments coming through having scabies, hog cholera, or anything of that kind, the stockyards are cleaned and disinfected by the railroad company, under the supervision of a man who is appointed by our department.

DR. WILSON: Is the disinfection of these stockyards an annual, routine affair?

DR. MALCOLM: Yes.

DR. WILSON: Is it possible for you to send a man to superintend the disinfection of each individual yard?

DR. MALCOLM: In the state of Iowa we have an organization at the present time, and have appointed an assistant in each county, and when the railroad company is instructed to clean and disinfect their yards, we tell them that the man will superintend it and the railroad company pays the expense.

DR. WILSON: We can not get things done that way in the state of Missouri. The railroads in Missouri have been legislated against, taxed, and harassed, and it is a pretty hard matter to get anything out of them.

Regarding the disinfection and sanitation, I am strongly for it, providing it is properly supervised and properly done. If it is not, I think it is a farce, and I think that one is laboring under a false security. I have been quite convinced that a man who takes a bath, perhaps once in three years, who lives in a house without screens on the windows, who sleeps, not between sheets, but on a tick and under a blanket, for a period of one or two years, without washing, knows anything about the proper disinfection of premises. You may not have anybody like that in Iowa, but down in Missouri we have a few of them. I venture to say that they are in every state in the Union.

Nobody realizes better than I do that sanitation on the average farm and in the average home is sadly neglected. Dr. Cotton made the remark that we do not realize the importance of disinfection. That is probably true. We do know that there have been hundreds of products put on the market that were worthless and they are still on the market, but at the same time, gentlemen, I think you could use a train-load of disinfectants, that would reach three times around the world, and I do not believe you would get practical results.

The best example is the human being. I have a friend in Boonville, Missouri, who was born in the Dutch East Indies. He is quite an eminent surgeon and is very brilliant. A short time ago I had a conversation with him, and he said that when he was an interne in the medical school in Holland, a sailor who had a case of smallpox came to the hospital. There wasn't a doctor in the hospital who was able to diagnose the case. They had to send clear across the country and import a skin specialist and he made the diagnosis of smallpox. The reason for that was that, since the days of Jenner, they had been using the virus for immunization against smallpox and absolutely eradicated the active

smallpox from Holland. That is not possible in all diseases because you can not get the immunity in all diseases that you can from smallpox vaccine.

Nevertheless, when the practitioner is put up face to face with the average stock owner, if the hogs are dying with cholera, or anything else that you want to mention, for which there is any immunizing agent, whether it is known to be good or not, and if you talk disinfection to the man, he is going to give you the laugh. You have to protect yourself, and while you are protecting yourself, you are protecting the owner's stock, and it is time to preach sanitation, which I do not want any man to think I am against, because I am not. As I said before, it is sadly neglected and there should be more practiced than there is.

However, don't lose sight of the fact that sanitation depends, so far as the layman is concerned, on his individual idea of cleanliness. If he is a man who takes a bath and shaves and washes his teeth and his feet as well, that man can disinfect the stable or hog lot, and do it well, but if he is a man who does not do any of those things, he can not disinfect anything if he can't disinfect himself. (Applause)

DR. C. E. COTTON: I agree with Dr. Gibson's statements and I am surprised that the state of Iowa, under present conditions, has not progressed any more than it has in the preventive precautions of cleaning and disinfecting. I referred particularly to the movement of live stock by rail, to and from public stockyards. Our tuberculosis control work is progressing very nicely and we should not sit back and fail to do our part in the requirements for the necessary precautions of proper cleaning and disinfection of railroad cars and public stockyards. We have reports that in some sections of our country one to two per cent of all cattle moved to public markets have tuberculosis. I think the time is ripe to require that all cars in which live stock has been transported to public markets be cleaned and disinfected before they can be used again. At the present time all public stockyards are cleaned and disinfected once each year and when inspectors discover stock to be infected with communicable diseases, the pens, alleys and chutes which contained or were used by such infected stock are cleaned and disinfected. The stockyard companies and the commission firms are all anxious that we provide some means of vaccination to prevent stockyards infections in animals that are shipped out of the yards and back to the farm for feeding and other purposes. By this method they can throw the responsibility for losses from such infection on to the sanitary authorities. With our present knowledge and experinece with preventive dosage of bacterins and vaccines we know that they are not satisfactory. I am satisfied that if all pens, alleys and chutes which are exposed to the sun were cleaned weekly and all parts of the yards that are covered be cleaned and disinfected weekly, it would go a long way in solving and preventing the losses from the so-called hemorrhagic septicemia and other infections.

DR. MALCOLM: I think that Dr. Cotton must have misunderstood me, because he refers to cleaning stockyards but once a year. They clean and disinfect whenever we require them to do so, but they must do it at least once a year.

We have local boards of health in every town in Iowa which are composed of the members of the town council and whenever a stockyards, no matter what size, is reported by them as insanitary, we immediately require that the railroad company clean and disinfect that yard—*clean it up and disinfect it* under our supervision.

DR. J. C. HARGRAVE: This is quite a discussion. I want to thank Dr. Gibson for his kindly remarks concerning the country to the north. I wish to say that if he had added the fact that we cleanse and disinfect the stockyards from coast to coast I would not have arisen to my feet. As you know, we have colder weather than you have, but in the spring our yards are thoroughly cleaned and disinfected from coast to coast without one exception.

I think that probably Dr. Eichhorn, who passed through the western part of that country, noticed that our yards are pure white. Our cars are likewise cleansed and disinfected.

Before concluding, I wish to say that in addition to the annual cleansing every spring, it is required that those yards shall be kept in that condition constantly. If we require them to be cleansed every week, according to the

amount of use they are given, they must be cleansed. Our cars are also cleansed and disinfected in the same manner, and must be cleansed and disinfected after being used and before being used again. Any shipper has a perfect right to refuse a car that is not furnished in that condition.

DR. W. F. CREWE: These suggestions, of course, are well made, but I tell you that it does not always work out in practice. Sime ten years ago we had an experience in North Dakota. We had a shipper who shipped a load of cattle to South Saint Paul. He purchased a load of feeding cattle, and brought them back in a car. They were taken west of the Missouri River to a territory where hog cholera was absolutely unknown. He took the feeding cattle and ran them in with the swine, and in a short period he had a nice outbreak of hog cholera, and quite an extensive loss. The conclusion was made that the hog cholera was brought in the car by means of the cattle.

The matter was taken up during the following legislature, and we had a law drawn requiring the cleaning and disinfecting of all cars before they could be loaded with live stock of any kind destined to our state. At the time that that bill was introduced, the manager of the Northern Pacific Railroad was in the capital city, and he went before the committee and protested against the passage of the bill. He said that it was just going to add another big load to the expense of railroading. He further said that if North Dakota passed it, Minnesota would want it, and Montana would want it, and so it would go, and it would mean quite an expense. Nevertheless, the bill was passed, in spite of the fact that during the night they substituted another bill, but the farmer legislators ignored it and passed the original bill. When it was put into effect they charged every farmer loading stock out of South Saint Paul $7.50 for cleaning and disinfecting the car. Of course, the farmers protested, and I took the matter up with the railway companies and claimed that it was absolutely an unfair charge, as I recollected in Canada the maximum charge was $1.50. The result was that finally it was reduced to $5, and within the past few years I think probably the laws have been ignored entirely.

At the present time the charge is $2.50 to clean and disinfect every car, whether it carries one or twenty cows, and that is another burden that is thrown back on to the producer. So if we try to introduce the measures and try to put them in force, I tell you, the poor man, who is the producer, is burdened with the expense. It isn't fair.

DR. C. E. COTTON: The gentlemen from Canada said that it works beautifully. We, at least, can follow Canada. I think it is an insurance for the owner to spend the $2.50.

DR. J. I. GIBSON: I don't think it should cost $2.50. If I am not mistaken the charge in Canada is about $1 per car. Of course, when we cleaned and disinfected the cars during the foot-and-mouth siege, the average amount of filth taken out of the stock cars in the States was 5,000 pounds, and the records showed that 16,000 pounds were taken out of one car. It takes some time to accumulate that amount of filth in a stock car, and during that time there is certainly a chance for the bedding to become infected with almost anything known in the country. You will remember that the railway officials objected to us forcing them to clean and disinfect at that time, and a year later they came and apologized and said, "You did us a favor by compelling us to clean our stock cars, as the condition not only rotted the floors but the timbers under the floors." With the universal cleaning and disinfection there should be only one bedding. The old system of bedding animals up to their bodies is all nonsense. A proper bedding is cleaned out by a man in a few minutes, and the disinfection of the car can be done cheaply. I think that $2.50 is too much. If you have universal disinfection, I think $1.50 ought to be the charge, and that would be the best $1.50 that the farmers all over the country ever invested in the interests of the prevention of disease in live stock. It would pay them well to meet the little charge.

DR. HARGRAVE: The charge is 75 cents for a car. Understand that this work is done at designated divisional points and under direct supervision. At country points, where it is not possible to apply the disinfectant properly, the car must be cleaned to the satisfaction of the shipper and the charge is seventy-five cents. That is a charge on the shipment, in addition to the freight. It appears on the way-bill.

DR. JULIEN: I know that the Bureau is doing its part in taking care of diseased shipments where it is known. There are many shipments made which are exposed, and diseased animals which are not always known, and as I pointed out—and it has been said here—public stockyards are infected places.

As to the use of the hypodermic syringe, you will recall I pointed out education, prophylaxis and sanitation. I did not mean to throw the hypodermic syringe away, but I did mean that in some localities—it may not be here—the syringe has been used altogether too often when we did not know what was the matter. To give hogs, which are suffering from hog cholera, bacterin of common salt solution certainly can not prevent hog cholera or do them much good. That is the point which I mean to make; we go too far and lose confidence, and we have allowed outselves to be placed entirely on a commercial basis. A correct diagnosis is of prime importance, and I would not throw the hypodermic syringe away at all, but I would, if possible, use it more judiciously. As for sanitation and education, when we stop the disease at its origin, then we will have made a great step towards preventing the transportation and shipment of diseased live stock.

COLLEGE NOTES

Dr. Shoichi Kondo is spending the winter in study at the New York State Veterinary College, at Cornell University. Dr. Kondo has published extensively on the single-dose method for immunizing against rabies.

The following veterinary deans were among those who attended the recent meeting of the U. S. Live Stock Sanitary Association in Chicago: Cary, of Alabama; Giltner, of Michigan; Moore, of Cornell; White, of Ohio.

NEWS ITEMS

Eleven children have been bitten by dogs affected with rabies, in Nashua, N. H., recently.

The second annual animal disease conference was held at Purdue University, November 18-19-20, 1924, under the auspices of the Veterinary Department of the Agricultural Experiment Station.

An outbreak of influenza made its appearance among the horses at Fort Sheridan, Ill., about December first. The disease has also appeared at the Remount Depot, at Grand Haven, Mich.

Dogs of Greencastle, Ind., were ordered muzzled or restrained for a period of fifteen days, during November, following an outbreak of rabies.

HOG CHOLERA PROBLEMS AS THEY RELATE TO THE PRACTITIONER*

By R. R. BIRCH, *Ithaca, N. Y.*

New York State Veterinary College Experiment Station

My paper today will not include characterization of a disease with which all of you are familiar, nor any attempt to cover, in a categorical manner, the several phases of the disease. My plan is rather to select a few problems that appear most troublesome and to discuss these somewhat in detail. Those I propose to consider are:

1. The handling of hog cholera by veterinarians and others.
2. Post-vaccination breaks, their causes, interpretation, and prevention.
3. The young-pig problem, as it relates to hog cholera control.

THE HANDLING OF HOG CHOLERA BY VETERINARIANS AND OTHERS

Let me begin with the statement that effective handling of hog cholera calls for the highest professional skill, and for a rather intimate knowledge of swine husbandry; and that departure in practice from this basic fact has been the chief obstacle in the way of hog cholera control. It is unfortunate that the apparent simplicity of the process of serum and virus administration has fostered the assumption that almost anyone can master the technic in a very short time; and growing naturally out of this assumption is the belief that, once the technic is mastered, no further knowledge is required. Thus it is no unusual experience to meet men who look on the vaccination of hogs as a mere mechanical process, in which is centered the beginning and end of the hog cholera problem.

It is not pleasant to record that a few veterinarians have, by careless work, contributed to the acceptance of this point of view, and that they have, by attaching exorbitant charges to inferior work, created a demand that vaccination of hogs shall be turned over to laymen. This demand is given substance principally by exceptions, for it is the exceptional veterinarian who does not understand the handling of hog cholera, and it is

*Presented at the annual meeting of the Kentucky Veterinary Medical Association, at Frankfort, July 10, 1924.

the exceptional layman who can long make good his claim to adequate knowledge of the subject. For a time all may go well with the untrained man's efforts. Then a disaster occurs which a closer observer would have prevented.

We have sketched thus briefly the origin of the demand that vaccination against hog cholera shall be placed in the hands of laymen. Today we have to face the discouraging fact that such a demand exists, and that in some quarters it is insistent; and while the more experienced veterinarians know that the drift of affairs bodes only evil for the swine industry, it is difficult for them to state the case without laying themselves open to the suspicion of mere self-interest. There is no desire to conceal the fact that the handling of hog cholera gives many veterinarians profitable employment; there is the greatest need that the veterinarian so employed shall give in service more than value received and that his clients shall come to realize that it is to their interest to employ him.

How then are we to keep the handing of hog cholera in experienced hands, and how are we to expose the fallacy which accompanies the demand to place it elsewhere? Not, I venture, by flying into a fit of temper, like an angry child, each time we learn that a county agent or farmer has vaccinated some hogs, nor yet by being too loud and insistent in our representations before legislative bodies. It is true that as tax-payers we have a right to object to helping pay salaries to public officials who do work they are not trained to do, and it is likewise true that, as professional men, interested in the public welfare, it becomes our duty to point out dangers that lurk in placing the handling of any destructive infectious disease of live stock in other than trained hands. But forcing the issue may bring only temporary advantage or none at all, and it will almost certainly cause the public to believe that immediate self-interest is the only motive involved. In the long run, we cannot hope to obtain collectively, by legislation, any advantage that we cannot earn individually, and make secure by the superior service our training and experience enables us to render.

We may be sure that ultimately hog cholera and other infectious animal diseases will be handled by trained men subject to immediate call, who know how to give their clients continuous and scientific service, and who can see beyond this particular fee for this particular call, to the good-will and confidence which are the veterinary practitioner's chief stock-in-trade, and which

will certainly determine his professional as well as his financial well-being. It is in the interest of this type of man and this character of service that I appear before you today to discuss some of the scientific aspects of the problems in hand.

Post-Vaccination "Breaks," Their Causes, Interfretation, and Prevention

Hog cholera "breaks" following simultaneous treatment are a nightmare to breeder, practicing veterinarian, and serum producer. Perhaps it is only just that all three should feel the force of these misfortunes, for all at times contribute to them, but unfortunately it is not always the one who is responsible for a particular disaster who has to shoulder the loss involved. And it is pertinent to add that in no phase of hog cholera work does the superiority of the trained man show to better advantage than in preventing these disasters. The trained man selects his subjects and times his vaccination as the history and condition of a herd may require; the untrained man accepts all comers and treats them all alike.

"Break," as it relates to post-vaccination trouble, is a term that has come into general use, but I do not know that I ever heard it defined; and it occurs to me now that perhaps some of the misconceptions involved in the interpretation of breaks grow out of this lack of a definition. I note that in my book on hog cholera I ventured a definition, though at the time the book was written I was unconscious of the fact that a term so familiar in veterinary literature had not yet acquired a concise definition. The one to which I refer is quoted: "Sickness and deaths due to hog cholera following simultaneous treatment are called "breaks" or "vaccination cholera." If the trouble appears during the first three weeks following treatment, it is called a "serum break," the supposition being that the serum is impotent and allows the virus to kill the animal. If it appears after a longer time it is called a "virus break," the effect being ascribed to the fact that inert virus has been administered, and the serum has produced only a temporary immunity which, as it disappears, leaves the herd again susceptible. Cahill and others use the term "post-vaccination trouble," which is self-explanatory and broad enough to include any disease that may spring up subsequent to vaccination. We will limit our discussion today to disease brought on, first, as a direct result of virus administered in simultaneous treatment, and second, to hog cholera which appears subsequent

to the reaction period (about three weeks in length) usually associated with simultaneous treatment.

Let us first consider "serum breaks," or those which occur in less than three weeks following treatment. The three-week period is an arbitrary standard and therefore amenable to limited variation, but in selecting it we wish it understood that it refers to breaks which *occur* within the specified three-week limit, rather than to those that are *reported* within that time. If we give serum and virus to hogs, and if during a subsequent period of three weeks they show no signs of sickness which a trained observer can detect, we may be reasonably sure that the virus they received is not responsible for any trouble which may appear subsequently. It often occurs that serum breaks are *reported* four, five, of even six weeks following the date of treatment, having their beginnings in reality much earlier. The untrained observer does not recognize the first danger signals.

The causes of serum breaks are hog cholera virus given with insufficient or impotent serum, or virus and liberal doses of serum improperly administered, particularly when these products are given at a time when the resistance of the animal is low. Some influences which contribute to the lowered resistance are:

1. Weaning.
2. Castrating, ringing, and minor operations.
3. Parasites, especially ascarids and lungworms.
4. Excessive fat.
5. Exhaustion due to chasing.
6. Exposure to which animals are not accustomed.
7. Overfeeding or abrupt changes in diet during the reaction period.
8. Influence of obscure diseases.
9. Unknown causes.

We should not forget the fact that a reaction usually follows the administration of serum and virus and that it is rendered more severe in proportion to the degree of influence exerted by the several factors we have just named. We may have merely the visible sickening of a hog or two, or the other extreme may be reached and all the animals may succumb.

Swine are especially susceptible to the influence of shipping, and some individuals will be profoundly affected merely by being trucked a few miles. We have seen the effects of shipping again and again, at times when it became necessary to test serum by using pigs recently brought in by wagon or truck, and experiences

of this kind make one doubly cautious. It is also a known fact that giving feeding hogs serum and virus in the stockyards, and shipping them at once to their destination on the farm, is responsible for many breaks, the effects of which are not always confined to the immediate animals treated. This fact is familiar to men in practice, and is somewhat less clearly recognized by the men who do the work in the yards. This procedure may be necessary at times, but the experienced feeder will pay a premium for shoats immunized and well over the reaction before they are moved.

Sows do not endure serum and virus well near farrowing time, and it is only very rarely that it should be applied under these circumstances. We will refer to this more in detail presently.

Weaning, except under the most favorable conditions, temporarily lessens the average daily gain, and especially when the pigs are moved to new quarters there is sometimes an interval during which their resistance is at a very low ebb. Simultaneous treatment administered just at this time invites dangers not otherwise encountered.

Operations should be Avoided

Castrating, ringing, and minor operations are to be avoided near the time when simultaneous treatment is applied. We have seen the evil effect of ill-timed castration many times, but never so strikingly as in one herd in which the manager, a budding efficiency expert, anxious to provide work for the help on a rainy day, decided five days subsequent to the date of vaccination to castrate all the boars in a herd of over 100 shoats. Some days later I saw a wagonbox full of dead barrows and I judge that the help spent at least one good day in collecting and burying them.

Pigs infested with ascarids do not tolerate virus well, and definite knowledge that a herd is badly infested with these parasites should suggest the greatest caution in regard to simultaneous treatment. It is impossible to over-emphasize the importance of this fact. In conducting many serum tests, in giving virus or virus and serum to experiment animals, and in our experiences in the field, we have seen the infested pig regularly drop out much more rapidly than does the one which is free from the parasites. This is especially true when the worms enter the gall-ducts.

Excessively fat and lazy hogs are not as good risks as are the moderately fleshed and active animals, due no doubt partially to

the lower resistance of the former and very probably at times to the fact that the dose of serum is deposited in the adipose tissue rather than in the muscle.

Chasing pigs in order to catch them for vaccination involves great risks and the prudent veterinarian will positively refuse to administer simultaneous treatment to animals under such circumstances. The confinement of hogs for vaccination is a problem in itself, but whatever method is employed, the pigs should all be enticed into close and secure pens before the work of vaccination begins. In one instance, against his better judgment, the writer gave simultaneous treatment to fifty shoats that escaped from a small pen in which they were confined, just as the process of vaccination began. They were retrieved by two boisterous young fellows who appeared to understand wrestling, but who certainly did not understand hogs. It was a hot afternoon, many of the shoats became exhausted and twenty-six of them died during the next three weeks. That was a long time ago, but memories of the incident still linger.

Careful Feeding Necessary

Over-feeding during the reaction period is to be avoided, and some extra precaution is required in this direction. If a few of the pigs lag in appetite, the surplus feed which they refuse is consumed by their associates and the consequent gorging leads to a day or two of dullness and invites a serum break.

As a very general rule, it is not safe to give serum and virus to hogs that are suffering visibly with diseases other than cholera. I do not believe this rule often is violated knowingly, though some obscure condition may sometimes be overlooked temporarily and discovered only after the break leads to closer scrutiny.

The interpretation of serum breaks is a subject on which all are not agreed, but it is a question of the greatest practical interest to the veterinarian. It is well to remember that hogs die of many diseases other than cholera, and that the prevalence of these diseases is not lessened in any way by serum-virus administration, but it is the part of wisdom not to accept any of these diseases as causes of death immediately subsequent to simultaneous treatment, unless the evidence is very clear.

It is not possible, when many factors contribute to the death of pigs following simultaneous treatment, to assign to each influence a proportionate responsibility. We are concerned principally with the primary offender, but here again discrepancies

in definition cause needless controversies. If we mean by primary cause of sickness or death the exciting cause without which, the sickness or death would not have occurred, then hog cholera virus is the primary cause of most febrile diseases occurring during the three weeks following simultaneous treatment, provided the disease affects any considerable proportion of a herd. If, by primary cause of death, we mean the contributing factor first to bring its effects to bear on a pig, then shipping, parasitisms, and other predisposing influences mentioned may be accepted. All depends on the point of view. It is too much like trying to decide whether the powder or the match caused the explosion.

Barring very exceptional cases, one does not consider it a compliment to his intelligence to be asked to believe that a serious outbreak of febrile disease, following closely in the wake of simultaneous treatment, is in reality hemorrhagic septicemia and not hog cholera, nor yet a combination of the two diseases. There is definite knowledge that hog cholera virus will produce the condition which usually exists; there is definite knowledge that each pig has recently been infected with virus; and there is definite knowledge that in the normal course of events the virus produces a reaction, slight or severe, during which or subsequent to which it is itself usually destroyed through the agency of the serum injected at the same time. Therefore, failure to demonstrate hog cholera virus in individual pigs suffering with post-vaccination trouble is not convincing evidence that the virus is not the chief offender, nor does the demonstration of bipolar organisms establish hemorrhagic septicemia as the primary cause and exclude the influence of hog cholera virus. We have seen numerous costly errors result from over-night laboratory diagnoses of hemorrhagic septicemia, which excluded consideration of the real offender—hog cholera virus.

Preventing Serum Breaks

The prevention of serum breaks demands that we shall know, recognize clinically, and circumvent their causes. Impotent serum is a favorite explanation which enables two persons who are present to shift the responsibility conveniently to a third person who is not present. No doubt some impotent serum is sold, but it is not the cause of as many serum breaks as are charged up against it. Faulty technic in administering, which includes insufficient dosage, is sometimes a factor, but it need scarcely be discussed among men long accustomed to vaccinating hogs.

It is the practitioner's responsibility to secure serum and virus only from well established and reliable sources, to protect these products against deterioration or contamination, and to employ the very best technic in administering them.

This part of the program assumed, we will consider prevention of serum breaks due to other causes. First, we must recognize these causes. Then, we have a number of precautionary measures available; we may delay or advance the date of vaccination, so as to avoid a particular influence, such as weaning, castrating, or shipping; we may delay or advance these influences; we may give increased doses of serum; or we may give serum alone and follow in a short time (less than four weeks) with serum and virus.

Exemplary Cases

We will select a few illustrations of the application of these very general measures. We were called one day to see a herd of nineteen sows, two of which had recently farrowed, and the remainder of which were due to farrow within a week. Hog cholera had appeared in a herd of shoats on the farm and was transferred to the sows, one of which had died the previous night. It was evident that the disease would ultimately reach all of the sows, but under the circumstances none of them were fit subjects for simultaneous treatment. Fortunately, there was an empty barn elsewhere on the farm and this was converted into farrowing quarters without delay. The sows were given large doses of serum alone, sprayed with disinfectant, and moved to individual pens in the new quarters. The attendant was told to watch for new cases of cholera, but none appeared, and when the pigs were approximately six weeks old, they and the sows received serum alone. Some four weeks later sows and pigs all received simultaneous treatment and all survived the effects. There were a few deaths among the pigs, at or immediately following farrowing, but the eighteen immune sows and approximately 120 thrifty, immune shoats represented the salvage. The extra cost in serum, above that which would have been required to give simultaneous treatment as a first and only measure, was approximately $1.50 each for the sows, and 20 cents for the pigs; in all, $51.00. One hardly dares appraise the salvage which might have been expected had simultaneous treatment been administered to the farrowing sows as soon as the emergency arose, but the owner was satisfied and I believe that any experienced man will agree that the extra expense was justified.

In one instance we were called in consultation to see about 100 head of feeders weighing approximately 100 pounds each, which had been shipped from the Buffalo yards to a point some 30 miles away. These shoats had received no treatment whatever. They were in good flesh and there were no definite symptoms of cholera among them, but many of them were coughing. The effects of the journey on them were plainly visible and the question had arisen as to how to handle them. On the whole they were a rather undesirable lot and the owner had been advised by the local veterinarian to handle them carefully, let them rest up a few days, and send them back to the yards. He did not wish to do this, so we gave them all liberal doses of serum and planned to give simultaneous treatment some three weeks later. When three weeks had elapsed, the shoats were reported as being well rested up, on feed, and in much better condition, but the cough still persisted, although it was much less severe.

Ideally, another dose of serum alone was indicated, and this was suggested to the owner, but under the circumstances, I did not press the point. The owner frowned on the added expense and without visiting the herd a second time, I yielded with some misgivings and consented that the local veterinarian should give simultaneous treatment. A break occurred and nearly half of the shoats died. I knew that the serum was potent for I prepared and tested it myself, and I had the greatest confidence in the thoroughness and skill of the attending veterinarian. It was simply a choice between one way which was more expensive and relatively safe and one less expensive and more hazardous, and in our desire to protect the owner from expense, we chose the greater evil.

"Follow-up" Treatment Successful

Some years ago a man who had the garbage contract of a large city in western New York, at irregular intervals imported one or more carloads of feeder shoats, purchased from farmers in Ohio, Indiana, or Kentucky. He had met with several disasters, both as a result of giving simultaneous treatment before the shoats were loaded and as a result of treating them as they were unloaded from the car. His losses became so heavy that he sought our advice and we suggested giving the animals serum alone as they were loaded and simultaneous treatment some three weeks after they had reached his feed-yard. This plan gave returns which well justified the extra expense.

As a result of many experiences in which I have used serum made and tested by myself, which has, in doses of 10 cc, protected healthy test pigs weighing 50 pounds or more, I have come to accept the fact that there sometimes exist adverse field conditions, not themselves fatal, against which the most potent serum, administered with virus, will not prevail. I have seen dead or starving pigs scattered all over a barnyard as a result of giving simultaneous treatment to sows at farrowing time. I have seen many shoats recently shipped, unduly exposed to inclement weather, or heavily infested with ascarids, die as a result of simultaneous treatment, and I have seen my share of little, weazened, sucking pigs, worth less than nothing, whose condition seemed directly due to ill-timed simultaneous treatment.

And, often under all of these conditions, I have known that the serum used was potent and have had reason to believe that it was correctly administered. These are results which may not ruffle the rather versatile vaccinator, who depends for his living principally on other pursuits, but they hardly satisfy the practicing veterinarian who must live with his clients and profit only when they prosper. It is true and perhaps even unfortunate that most of the causes of serum breaks may be ignored many times without dire consequences, but the exceptions prove disquieting and the experienced man would rather avoid a break than explain the causes of breaks to disgruntled clients, granted even that his conscience and scientific outlook would allow him to ascribe the break in an offhand manner to "impotent serum" or "hemorrhagic septicemia."

Simultaneous Treatment here to Stay

As far as we can see into the future, simultaneous treatment against hog cholera is here to stay. In most cases it gives us the results we desire, but it must be timed carefully and used with discrimination. We do well to know the causes of breaks and to learn to recognize these causes in the field; we should secure careful histories of all hogs that require vaccination; we should time our vaccination to avoid devitalizing influences as much as possible and when compelled to give treatment in spite of these influences, we should increase our dose of serum materially, or give serum alone to protect, pending a more favorable time for the final simultaneous treatment. And we should inform the owner, before treatment is administered, that it involves a little danger and thus put him on his guard concerning the subsequent

handling of the herd and the necessity for reporting trouble should it occur.

Virus breaks are referred principally to one cause, which is inert virus, although virulent virus used in exceedingly small doses might be responsible. There is also the probability that treating pigs too young may contribute to virus breaks, but this is a subject which requires further investigation and which I will consider more in detail in a moment.

The Young Pig Problem as It Relates to Hog Cholera Control

There remains time to touch but briefly on natural and acquired immunity of young pigs to hog cholera, but it is a subject in which I am greatly interested and which I hope will be thoroughly discussed here.

The young pig is rather erratic in his reactions to hog cholera virus, and there are factors involved which are not yet well understood. I remember that in the earlier days of serum production we were told that when our virus began to lose virulence we could restore the virulence by using young pigs. We tried this a considerable number of times, only to find that we were less certain of killing the young pigs than we were of killing older shoats. We had every reason to believe that the pigs used were from susceptible sows, but this was not as carefully checked as it should have been. We ascribed this result which, I believe, has not since been generally confirmed or denied by other observers, to a natal immunity comparable to that which exists in babies against certain infectious diseases which affect older children and adults. It was recognized that the pigs of immune sows were often immune and, later, evidence developed that this immunity is transferred, in part at least, through the dam's milk.

As regards hog cholera, the influence of antibodies which may be transferred from dam to offspring in the uterus is not yet well understood. As early as 1910 and 1911 Reynolds was experimenting with the young pig problem, and at one time he expressed the hope that immunity could be established in young pigs nursing immune mothers by the simple and inexpensive process of administering virus alone. Indeed he found it possible to immunize many pigs in this way, but he encountered frequent exceptions and as near as I can gather gave up the project on that account.

In New York we started in 1910 with the plan of waiting until outbreaks of cholera appeared and then administering serum alone. This proved unsatisfactory, so we adopted the plan of waiting until the pigs reached an age of 10 or 12 weeks and then giving simultaneous treatment. This plan gave excellent results some of the time, but we encountered many herds in which the pigs of immune mothers would die of cholera before they reached the specified age. How to protect pigs in these herds became a problem. In the meantime we had been called to investigate trouble in a considerable number of herds within the state and in some of these simultaneous treatment had been applied to the young pigs. The number of unthrifty pigs we saw in these herds did not recommend the method to us, and we never adopted it, for, rightly or wrongly, we ascribed the result to the use of simultaneous treatment. Instead, we adopted the plan of protecting the pigs with serum alone until they were old enough and in fit condition to receive simultaneous treatment. Usually, when the dams were immune, this required one dose of serum alone between the third and sixth week. Exceptionally, two doses of serum were required.

Expense an Important Factor

This plan proved highly effective and we have followed it ever since, in handling young pigs. Cahill, working independently in Massachusetts, at about the same time, hit upon this identical method and he likewise found it eminently satisfactory. Schoenleber, in Kansas, early adopted the plan of giving all hogs, large and small, a dose of serum alone some weeks prior to simultaneous treatment, though, as we recollect, he made no particular reference to its application in the handling of young pigs. Although the method was effective, he naturally abandoned it because of the needless expense involved in following it as a blanket measure, applicable to young and old. He employed, instead, direct simultaneous treatment which was administered, as a rule, to pigs some time subsequent to weaning. This, we believe, is now the usual custom followed in the Corn Belt, and with an acceptable degree of satisfaction. As a routine measure, it proved a dismal failure in our eastern herds, many of which subsisted partially or wholly on garbage and were thus more or less constantly exposed to hog cholera, in addition to being grown up in surroundings far less desirable than are provided for the average Corn Belt herd.

It has long been evident to all engaged in maintaining herds immune to hog cholera that there might be advantages in treating the pigs simultaneously at a comparatively early age. A shorter period of risk, convenience in handling, and decreased serum costs are the advantages held out. There has grown up a tradition, however, that sucking pigs given simultaneous treatment do not all thereby acquire lasting immunity. How much of this tradition is founded on fact has not yet been determined. Cahill, in 1918, after experimenting with several hundred baby pigs, reached the conclusion that less than half of them acquired lasting immunity as a result of simultaneous treatment. His results were given prominence and were supported by various instances observed by field workers.

We have observed at least three instances, in which hogs that we have every reason to believe received simultaneous treatment, as baby pigs, succumbed to hog cholera several months later. Our original interpretation of the difference, between the pig which received lasting immunity as a result of simultaneous treatment and the one that did not, was referred to the natal immunity of which I have already spoken. Our belief was that as long as this natal immunity endured it prevented the reaction and consequent active immunity normally induced by the virus. More recent investigations, conducted by Pickens in Maryland, strongly indicate that this conception was wrong, for the number of immune baby pigs he found was out of all proportion to the number that, even in Cahill's experiments, were found, as old hogs, to be susceptible, after having been treated simultaneously as baby pigs.

Problem Awaits Solution

This entire question is still open, and it is one which deserves our closest attention and study. Experiments conducted by Niles and others in the Bureau of Animal Industry and by Benner, at the New York State Veterinary College, strongly suggest that Cahill's results were exceptional, and that most young pigs actually acquire lasting immunity as a result of simultaneous treatment. A question of this kind requires much observation and experimentation before it can be decided definitely, for a few exceptions to a general rule may often nullify its effective operation in the field as a routine measure.

Practically, our ideal is to keep the young pig growing and thrifty at all times and to provide a plan of handling that will

render him permanently immune to hog cholera. Any method that cuts in too strongly on this ideal will finally be rejected. If simultaneous treatment administered to baby pigs is found to produce a stunting effect too frequently, or if it fails too often to produce permanent immunity, it will not gain much favor. Otherwise, it will prove a great saving. It now seems very likely that it will find a limited application in selected herds that are in the pink of condition, but here again the best clinical talent will be required in selecting the instances in which it may safely be employed. And so I end with my original statement: that the effective handling of hog cholera is for trained men only.

REFERENCES

Benner, J. W.: Immunizing young pigs against hog cholera. Rpt. N. Y. State Vet. Coll. 1922-23, p. 204.
Birch, R. R.: Observations in regard to immunizing young pigs. Corn. Vet., ix (1919), 2.
Birch, R. R.: Natural and artificial immunity of young pigs to hog cholera. Corn. Vet., xiii (1923), 2, p. 159.
Cahill, E. A.: Hog cholera in the East. Jour. Amer. Vet. Med. Asso., liv (1919), n. s. 7 (4), p. 314.
Dimock, W. W.: North American Veterinarian, iii (1922), 5.
Dorset, M.: Researches on hog cholera. Rpt. U. S. Live Stock San. Asso. 1911, p. 129.
Hoskins, H. P.: Observations on 2800 pigs inoculated with hog cholera virus. Jour. Amer. Vet. Med. Asso., xlix (1916), n. s. 2 (6), p. 817.
Hoskins, H. P.: Some observations on hog cholera and the use of serum. Amer. Vet. Rev., xlvii (1915), 1, 2, pp. 46-56, 188-196.
Niles, W. B., & Reitz, J. H.: Duration of immunity against hog cholera following simultaneous treatment of young pigs. Jour. Amer. Vet. Med. Asso., lvii (1920), n. s. 10 (2), p. 176.
Pickens, Welsh & Poelma: The susceptibility of young pigs to hog cholera. Jour. Amer. Vet. Med. Asso., lvii (1921), n. s. 11 (4), p. 403.
Reynolds, M. H.: Immunity in young pigs from cholera immune sows. Amer. Vet. Rev., xxxviii (1910), p. 236.
Reynolds, M. H.: Hog cholera. Virulent blood vaccination. Rpt. U. S. Live Stock San. Asso. 1911, p. 135.

PENNSYLVANIA CONFERENCE

The 1925 Conference of Veterinarians of Pennsylvania will be held at the Veterinary School of the University of Pennsylvania, Tuesday and Wednesday, January 6-7. Dean Klein has announced a very attractive program for the two days.

Dr. S. A. Goldberg, of Cornell University, will discuss "The Basis of Symptoms in the Nervous Form of Dog Distemper." Dr. F. R. Beaudette, of the New Jersey Experiment Station, will present "White Diarrhea of Chicks and Its Control." Dr. John R. Mohler, Chief of the B. A. I., will address the Conference on "Foot-and-Mouth Disease."

"Hemorrhagic Septicemia Aggressin," by Dr. Wm. S. Gochenour, of the B. A. I.; "Principles of Immunity and Biologic Therapy," by Dr. John A. Kolmer; "Vitamins in Animal Nutrition," by Dr. R. Adams Dutcher, of Pennsylvania State College; and "The Relation of the Calf to the Spread of Abortion," by Dr. F. M. Hayes, of the University of California, are among the subjects to be discussed. Members of the Veterinary Hospital Staff will present interesting case reports.

A MODIFICATION OF THE CHLOROFORM PROCESS FOR CLARIFYING HOG CHOLERA SERUM[1]

By R. R. HENLEY, *Washington, D. C.*

Biochemist, Biochemic Division, Bureau Animal Industry, United States Department of Agriculture

A description of a method of separating clear serum from defibrinated blood, based upon the fact that chloroform, under certain conditions, precipitates hemoglobin, but neither precipitates nor adversely affects serum proteins which carry the antitoxin, was published in March, 1922.[1] Briefly, that method consisted of five steps: (1) the addition of bean extract and chloroform to cold, phenolized, defibrinated blood; (2) the agitation of the mixture so obtained; (3) the separation of the clear serum from the precipitated hemoglobin by mechanical means; (4) the sterilization of the clear serum by heat and filtration; and (5) the addition of a preservative. Step 4 is optional. Since the issuance of the paper referred to above, the process has been applied on a large scale under practical conditions by several producers of anti-hog cholera serum, and additional study has been given to it by the writer. As a result, certain defects in the procedure, as originally described, have been disclosed. The purpose of the present paper is to present very briefly the facts developed, together with recommendations for changes in the method, so as to remove or reduce the difficulties which have been encountered.

In general, failure of the process to operate successfully is exhibited by final products in which one or more of the following unsatisfactory conditions prevail: (1) the product is cloudy; (2) it is highly colored; (3) the yield is small; and (4) although a good yield of a clear product is obtained and bottled, a more or less pronounced precipitate develops on standing.

1. CLOUDY PRODUCTS

Cloudy products are caused either by (a) failure of the blood-chloroform mixture to clot, or (b) too rapid contraction of the clot.

The blood may fail to clot because (1) insufficient phenol is present, (2) insufficient chloroform is added, (3) the blood is too

Received for publication, July 14, 1924.

warm when the chloroform is added, or becomes too warm before clotting is complete, (4) the shaking or mixing is insufficient, interrupted, or too prolonged, (5) the mixture of chloroform and defibrinated blood is not allowed to stand undisturbed, or (6) the time between shaking and centrifuging is too short. For most of these causes the remedies are obvious. Thus, 0.5 per cent of phenol should be present. In beginning the use of the process 50 cc of chloroform should be added to each 500 cc of blood. The blood should be cold, 40-42° F., when the chloroform is added, and it should not be allowed to become warm during shaking. A shaking of from 10 to 15 minutes is required for satisfactory clotting. After shaking, and before the clot has become firm, the mixture should be transferred to cold centrifuge cups.

Cloudy products may also be caused by too rapid contraction of the clot. This is due to the clot being allowed to stand, in the interim between shaking and centrifuging, at too warm a temperature. Rapid contraction is avoided by keeping the clot, after shaking and before centrifuging, at a temperature of 50° F. or lower, for two hours or longer. It should then be kept for another two hours at a temperature of 70° to 80° F.

2. Highly Colored Products

The color of the final serum product may vary from a pale amber to a rather deep red. In general, the clarity and the color of the final product are controlled by identical factors, so observance of the precautions which insure a clear product will give a product of a light color. Insufficient amounts of phenol or chloroform and too short a shaking all tend to produce a more highly colored product. The addition of 15 cc of a 5 per cent phenol solution to each 500 cc of defibrinated blood antitoxin, before the bean extract and chloroform are added, will bring about a more complete removal of the red coloring matter when the blood is treated later by the chloroform process. The presence of the additional amount of phenol increases the phenol content of the clarified serum by only a few hundredths of one per cent.*

3. Low Yields

To the producer of serums the yield of clarified serum from old

*It has been found that the addition of weak acids, such as carbonic or citric acid, to the defibrinated blood before the bean extract and chloroform are added, will bring about the removal of all or nearly all color when the blood is treated later by the chloroform process. However, the effect of the addition of weak acids on the potency and keeping qualities of serums has not been studied, so their use cannot be recommended. That a more complete removal of the hemoglobin is afforded in the presence of weak acids is mentioned here because it indicates that the acidity, or hydrogen-ion concentration of the serum, is a factor previously unsuspected in the reaction between chloroform and hemoglobin.

blood is of particular importance. As a result of the work of commercial laboratories, as well as of studies by this laboratory, it may be said that when the chloroform process is applied to 100,000 cc of serum a yield of from 70,000 to 74,000 cc of clear serum may be expected. The addition of the necessary preservative, i. e., 1/15th volume of 5 per cent phenol, naturally increases these figures to 74,666 cc and 78,966 cc, respectively. That is, the volume per cent of the final product has been consistently 74 per cent or more, and at times has reached 79 per cent. A number of factors control the amount of clear, light-colored serum which can be obtained from defibrinated blood.

Some of the factors are not, and others are subject to the operator's control. Of those factors which govern the yield of clear serum and which the operator cannot control, the most important is the proportion of red blood cells and serum in the defibrinated blood. Of the factors which the operator can control, the most important are (1) temperature and (2) the efficiency of the centrifuging of the serum from the clot. High temperatures preceding separation increase the yield, but if the serum is exposed to elevated temperatures before the hemoglobin has been completely precipitated, the product will be cloudy. Thus, it may be said that low temperatures after shaking and before centrifuging favor clarity of product and that high temperatures increase the yield. The previously recommended practice of holding serum in the interim between shaking and separation, first at a low temperature and then at a high temperature, was designed to accomplish both objects, i. e., a large yield and a clear serum.

It is obvious that yield is dependent upon the completeness of the mechanical separation of the serum from the clot. Each operator should determine the duration and speed of centrifuging necessary for the maximum yield. With the machine used in this Division, a speed of 3200 r. p. m., giving a force of 1700 x gravity, maintained for 25 minutes, has been found sufficient. Following the first centrifuging and the removal of the clear serum, the clots, which in our experience are at this stage always decidedly warm, are broken up, allowed to stand at a temperature of about 90° F. for an hour or two, and recentrifuged. This is done for the purpose of expressing the serum retained in the clots. Exact details for a method of centrifuging that will return the greatest yield cannot be given, as the method will depend upon the machine employed.

The container employed to hold the mixture of blood and chloroform during shaking exerts an influence on the final yield, for the clotted mixture adheres to the walls of containers and is removed with difficulty. This entails loss. We have used centrifuge cups as containers, and a Dover egg-beater, and also mechanical stirrers, for mixing the blood and chloroform. However, our usual practice is to shake the mixture, either by hand or machine, in litre flasks, and to transfer the blood as soon as it becomes thick, but while still semi-fluid, to cold cups. This method is advised until thorough familiarity with the process is acquired.

Some of the clot is retained on the walls of the flask and this is removed later by pouring a small amount of the clarified serum (15-25 cc) into the flask, shaking slightly, and pouring the material thus secured into the clots obtained by the first centrifuging. This is recentrifuged. If the residual clot in the flask is shaken violently, the serum will be hazy or slightly cloudy, but this is removable by a more prolonged centrifuging.

4. Products Which Are Clear at Time of Preparation but Become Cloudy on Standing

It sometimes happens that a beautifully clear, light-colored serum will be obtained, which, after phenolization, bottling and sealing, becomes very cloudy. The clouding is due to the formation of a precipitate which in time collects and settles and from which, when the settling is complete, the supernatant clear serum can be removed easily by siphonage. As far as it has been possible to determine, the cause of this condition is due to the retention of an excess of chloroform in the finished product and the most probable cause of the retention seems to be lack of sufficient centrifuging. In the event that the condition does develop, the cloudy serum should be allowed to stand until the precipitation is complete and the clear serum then removed by decantation or siphonage. In order to prevent its development in subsequent lots, the duration of centrifuging should be increased and the clarified serum, after phenolization, should be stored for a week or ten days in bottles, provided with cotton plugs, before being transferred to the final sealed containers.

Serum will become darker in color when stored in unsealed than in sealed bottles; but a precipitate is more likely to develop in serum stored in sealed than in unsealed bottles. On this account a preliminary storage in unsealed bottles is advisable.

Based upon the foregoing observations the following procedure, which differs in some details from that originally described, is recommended.

Step I. Addition of precipitants.

1. Take 500 cc of old, phenolized, defibrinated-blood anti-hog cholera serum, place in a litre flask or other suitable container.
2. Chill to 40° F.
3. Add 10 cc of bean extract, mix, let stand for 2 minutes.
4. Add, while stirring or shaking, 50 cc of chloroform. (50 cc of chloroform is more than sufficient; 30 cc will usually suffice, but 50 cc should be used until the operator understands the process.)

Step II. Mixing.

If possible keep the blood at a temperature of 50° F., or lower, during this step.

1. Continue stirring or shaking, either by hand or machine, until the blood becomes thick. Thickening is recognized, when the shaking is done by hand, by sound and feel rather than by sight. From 10 to 15 minutes mixing is usually required to produce the proper consistency. No explicit instructions can be given for the time required for shaking different batches of serum. Expertness in this respect will be acquired only by experience through the practical application of the method. Violent stirring is not necessary. Once begun, stirring should not be interrupted.

2. As soon as the mixture becomes thick, it should be poured, without cessation in the stirring, into cold centrifuge cups. If the mixing is done in a flask, the flask should be saved, without further agitation, for the purpose of reclaiming residual, adhering clot. If the blood and chloroform are mixed in centrifuge cups the necessity for a transfer is avoided, but, since it has at times been found more difficult to obtain thorough mixing in cups, the beginner is advised to use flasks. Later, he may adopt the most convenient procedure.

Step III. Precipitation.

The precipitation of hemoglobin by chloroform does not appear to take place instantaneously, so, following step II:

1. The mixture is held for at least two hours at a temperature of 50° F, or lower, and then
2. For two hours at a temperature of 70 to 80° F.

Step IV. Separation.

1. The mixture is centrifuged for not less than 25 minutes with a force of 1700 x gravity. With a greater or lesser force the time of centrifuging would have to be lessened or increased.
2. The clear serum is poured off and saved.
3. The clots which remain in the cups are broken up and combined. To the combined clots, there is added any serum or clot remaining in the flasks in which the mixing was done. The clots in the flasks, may, if necessary, be washed out with 15 to 20 cc of clear serum.
4. The combined clots are held at a temperature of 80 to 100° F. for at least one-half hour.
5. The clots are recentrifuged. If the serum is not perfectly clear it should be recentrifuged.

Step V. Sterilization.

The clear serum may be heated to 58-60° C. for one-half hour and then passed through bacteria-proof filters.

Step VI. Phenolization.

If the serum is not to be heated, its volume is measured, the value so obtained is divided by 15 and the indicated amount of 5 per cent phenol is added. Following phenolization the serum should be stored, for a week, in loosely-stoppered or cotton-plugged bottles.

Discussion

The process will, it is believed, afford a satisfactory yield of a clear, light-colored product. On this account no alteration in any of the steps should be attempted until the operator has obtained sufficient experience to enable him to evaluate any untoward results which may occur. In beginning the use of the process a small test lot of each batch of defibrinated blood intended for treatment by the chloroform process should be clarified by the process before the main batch of blood is treated. Exact observations should be made and recorded regarding(1) the amounts of chloroform and bean extract used, (2) the time and temperature of shaking, (3) the time intervening between shaking and centrifuging and of the temperature during that interval, (4) the speed and duration of centrifuging, (5) the condition of the blood at different stages of the process, and (6) the yield. The observations made upon the test lot will serve as a guide for the clarification of the main batch of serum. When experience has been gained, the operator may reduce the amount of chloroform, shorten the time interval between mixing and separation, or make any other change, which, without impairing the potency, yield, color or clarity of his product, will effect a saving in time or material.

For the encouragement of prospective users of the process, it may be said that the process is far simpler than the description indicates, and also, that while considerable time is required, it is not actual working time. The process is in fact the bean-salt process, plus the additional step of adding chloroform, and observing certain temperature and time limits.

In conclusion it is desired to emphasize the fact that the process is a salvage process solely. By its use the serum producer has more than a fair chance of recovering otherwise unsalable products, for by this process it is possible not only to clarify, but also to sterilize and concentrate a serum. Furthermore, it has been employed sufficiently to prove its practical adaptability and economic value. Serum producers should familiarize themselves with the various steps, so that if the necessity arises they will be in a position to avail themselves of the advantages the method affords.

REFERENCES:

[1]Henley, R. R.: Clarification of hog-cholera defibrinated-blood antitoxin. Jour. Amer. Vet. Med. Asso., lx (1922), n. s. 13 (6), p. 717.

[2]Dorset, M. & Henley, R. R.: A note on the preparation and use of agglutinine from beans. Jour. Amer. Vet. Med. Asso., 1 (1917), n. s. 3 (6), p. 699.

CONCERNING THE PATHOLOGY OF CONTAGIOUS ABORTION[1]

By W. W. WILLIAMS, *Springfield, Mass.*

Contagious abortion has been defined as a specific infectious disease, caused by *B. abortus*. Some have questioned this. Contagious abortion has occupied a peculiar position, from the pathologist's point of view, for, with all that is written about it in other respects, literature remains almost wholly silent regarding its pathology. It is therefore quite desirable that this should be clearly described, in order that the disease may be recognized by the pathologic changes. It is also desirable that the generally accepted principles of pathology shall be applied to its description, since, back of everything else in scientific therapeutics, the clinician must have a clear conception of the pathology of the disease with which he deals. That such does not exist in relation to contagious abortion is evidenced by the great diversity and conflicting character of the control measures advised. In *The Cornell Veterinarian* for April, 1924 (p. 115), R. R. Birch, of the Experiment Station of the New York State Veterinary College, Cornell University, explains in what respects he believes contagious abortion conforms to the pathological principles which serve to identify it as a specific infectious disease.

Birch says:

"Perhaps we have presumed too far, but we assumed that this audience did not need to have the term 'specific infectious disease' defined. It is a common medical term familiar to all, and we will not construct a definition of our own lest we be accused of constructing one into which Bang abortion disease will fit.

"We accept Dr. Moore's definition, and with it, as an integral part, the amplifications clearly indicated in his discussions of specific infectious diseases. We remember in Dr. Moore's discussions the regular appearance of such terms as etiology, period of incubation, channels of elimination, channels of infection, symptoms, lesions, and specific reactions. *Bact. abortum* fits into this scheme perfectly. It is distinguished as a definite etiological entity; it has a relatively long incubation period; in infected cows in which the chorion is invaded it is eliminated from the uterus a short time before, during, and for a few weeks subsequent to the event of abortion, and it is also eliminated at times in the milk; infection has been brought about by feeding, and by intravenous, subcutaneous, teat canal and intra-vaginal inoculation; it brings about regularly, after an incubation period of several weeks clinical symptoms including especially sinking of the sacrosciatic ligaments, breaking down of the uterine seal, edema of the vulva, discharge from the uterus, and expulsion of the premature fetus; it produces microscopic lesions in the epithelial cells of the chorion which are not known to be produced in cattle by any other organism; and infected animals react to serological tests which are specific as they relate to disease in cattle. When intravenous inoculation is resorted to in causing infection, it localizes, regularly, and persists in certain definite parts

[1]Received for publication, July 19, 1924.

far distant from the point of entrance (chorion, udder, lymph glands) and it is capable of invading the pregnant uterus from the blood stream regularly and bringing about expulsion of the premature fetus. Collectively, these facts led us to speak of *Bact. abortum* as the cause of a specific infectious disease.

"The facts enumerated are verified by experimental work. Acceptance of *Bact. abortum* as the cause of a specific infectious disease *does not depend on its ability to produce symptoms or lesions not caused by other organisms.* In medicine, most of the difficulties involved in differential diagnosis grow out of the fact that different causes bring about like symptoms or lesions; and *it is the fact that Bact. abortum regularly brings about the definite manifestations we have enumerated, and not the fact that other organisms do not cause some of them,* that establishes its status as a specific infectious disease."

The following excerpts are given as illustrative of the pathologist's version of infection and specific infection. It is desired to consider in what respects contagious abortion conforms to these principles.

Moore[1] says:

"The term infection is generally understood to mean the entrance into the animal body, from without, of living micro-organisms capable of multiplying within the living tissues and of *producing in consequence of this multiplication a local or a general disease.*"

"If the invading organism is one possessed of definite pathogenic properties, such as the bacterium of anthrax, giving rise to a *definite series of symptoms and lesions,* the affection is designated a specific, infectious disease."

Adami[2] states:

"Attention must be called to the double meaning of the term (infection), as employed by the hygienist and the pathologist. For the hygienist, water, air and other media may be infected, i. e., infection consists in the mere presence of potentially harmful microbes, and the mere act of their coming into contact with the organism. * * * * For the pathologist, infection is a process: for him, the mere presence of pathogenic bacteria in the mouth or the skin, or in the digestive tract, does not constitute infection: that is brought about by the growth of those bacteria, the diffusion of their products, and the reaction they induce in the organism is the essence of the process. For the pathologist, infection is the succession of changes induced in the organism generally by the growth within it of microbes; or, it is the interaction between the organism and the micro-organism."

The clinician is interested in the pathologist's viewpoint, from which standpoint it is proposed to consider the morbid changes cited by Birch as his justification for classifying as a specific infectious disease, the injuries caused by *B. abortus.*

In the first place, it would hardly seem necessary that it should, in order to be the cause of a specific infectious disease, fit perfectly into the scheme given by Birch, i. e., "the regular appearance of such terms as etiology, period of incubation, channels of infection, symptoms, lesions and specific reactions." Of course, a specific infectious disease has all of these, but the pathologist's definitions, as cited above, fail to mention this chronology as the criterion for the determination of its specific character. It would seem that the interaction between the organism and the micro-organism, as indicated by the symptoms and lesions, should be

quite sufficient from the pathologist's viewpoint to decide whether the micro-organism in question possesses common, or specific pathogenic characteristics. Just what bearing specific blood reactions have upon the determination of the specific character of disease would be open to question, inasmuch as these reactions do not indicate morbid tissue changes, but merely that a certain type of micro-organism is or has been present in the tissues of the body. Further, the mere determination that a certain bacterium is present in a pathologic area does not indicate the presence of a specific infectious disease unless the micro-organism under consideration has first been proved to be the cause of certain definite pathologic changes; or, as Moore states, "a definite series of symptoms and lesions."

In order, therefore, to obtain a clearer conception of the pathologic status of contagious abortion, we will return to a consideration of the lesions and symptoms of this disease as enumerated by Birch and endeavor to see in what respects these changes are due to the proven pathogenic properties of *B. abortus*.

1. Sinking of the Sacro-Sciatic Ligaments.
2. Breaking Down of Uterine Seal.
3. Edema of the Vulva.

I find no pathologic data showing or purporting to show that *B. abortus* exerts any action whatsoever upon the sacro-sciatic ligaments, uterine seal or vulva. The changes in these structures, as enumerated, commonly appear physiologically at the termination of gestation and are supposed to represent a part of the physiological reaction of the pregnant animal in preparation for birth.

4. Discharge from the Uterus.

Various references occur as to the character of abortion exudate. By general inference, it is associated etiologically with *B. abortus*. I am informed, however, that when proper selection of culture media is made and adequate cultural methods employed a heterogeneous group of bacteria appear in these discharges. Bacteriological data as a whole indicate a general absence of *B. abortus* in discharges occurring at other times than during the first week or two following parturition. What relation *B. abortus* bears to these discharges, has not been pointed out. The question under consideration is the pathologic status of this discharge in relation to contagious abortion. This would seem to be dependent upon several factors which have, to date,

apparently not received the attention of the pathologist, namely, (1) the character of the pathological changes which cause the discharge, (2) the seat of the reaction, and (3) the pathologic influence of *B. abortus* upon the character of the tissue reaction.

5. Expulsion of the Premature Fetus.

It is to be questioned whether abortion is a symptom of any known disease. Abortion, as commonly understood, consists of the premature expulsion of a fetus, and it is usually preceded by death or devitalization of the fetus. So far as is known, fetal death is attributable in principle to the same causes as post-natal death, such as sepsis, asphyxia, inanition. The causes of the expulsive contractions of the uterus have not been generally agreed upon or largely discussed. It seems improbable that the cell inclusion of abortion bacilli in the chorionic epithelium, as described by Smith, could tend in the least to cause the uterus to expel its contents. Abortion itself, that is, the act of expulsion, may be considered a physiologic process, the aim of which is to rid the uterus of a non-viable fetus.

From the viewpoint of the pathologist, it would seem more appropriate, in defining contagious abortion as a specific infectious disease, if Birch had either confined himself to strictly pathological considerations or had explained why pnenomena commonly regarded as physiological become distinctive symptoms or lesions indicative of a specific infectious disease as soon as *B. abortus* invades the animal body.

6. Microscopic Lesions in the Epithelial Cells of the Chorion Which Are not Known To Be Produced by Any Other Organism.

Smith[3] states:

"In all cases in which the invasion of epithelial cells was detected, this feature was associated with positive cultures of *B. abortus* or the characteristic guinea-pig disease after inoculation, or with both tests positive. Besides the chorionic epithelium, the epithelial cells at the margin of the cotyledons and those of the outermost villi of the latter have been found invaded. The bulk of the villi though undergoing profound changes are as a rule free from these nests of bacteria."

In the writings of Smith occurs the only description which has appeared in print of any characteristic tissue change (if cell inclusions may be termed such) typifying the presence of *B. abortus* in a pathologic capacity in the cow. He says that, in the chorionic villi, the inclusions do not as a rule occur. Inasmuch as it is in the villi that the lesions which are commonly responsible for abortions occur, it follows that the pathogenic relation of these inclusions to the degeneration of the chorionic villi and the

occurence of abortions is not established. I would assume, however, when *B. abortus* reaches the uterus, through the blood stream, the chorionic villi would be the primary seat of infection, and in this area the pathologist should be able to recognize not simply a cell inclusion, but a cellular disintegration in addition, resulting from the presence of *B. abortus* per se. Thus, in reviewing the changes which are supposed to identify contagious abortion as a specific infectious disease, I find only one typical morbid phenomenon described, the cell inclusion of Smith. The question may well be asked whether this change is sufficient in itself to signify that abortions occur as a result of this lesion and whether the pathologic symptoms and lesions are clearly enough defined to entitle contagious abortion to the status of a specific infectious disease in accordance with the definitions as quoted from Moore and Adami.

7. The Facts Enumerated Are Verified by Experimental Work. It Is the Fact that Bact. Abortum Regularly Brings About the Definite Manifestations We Have Enumerated That Establishes Its Status as a Specific Infectious Disease.

A careful perusal of the original article of Birch,[4] fails to elicit any supporting experimental work or references (excepting as quoted in the preceding paragraph) pertaining to the symptomatology or lesions of *B. abortus* infection. I therefore assume that Birch, in referring to the *verification of facts* by experimental work, did not intend to include the pathology of contagious abortion.

The common practice of many investigators, to label freely their presumptions, opinions and conclusions as *facts*, cannot be too severely criticized. The average reader is often without the data upon which the conclusions or hypotheses have been based and, instead of looking up the facts, accepts any statements which appear to him as plausible. Investigators employed by educational and governmental institutions should recognize the extraordinary responsibilities which they assume and conduct their work with a deep regard for scientific accuracy. Anyone acquainted with the work of these investigators knows that some of them reach conclusions regarding which they feel so certain that they publish them as facts and overlook the facts upon which the hypotheses are based.

In commenting upon the statements relating to the action of *B. abortus*, its pathogenicity is not questioned; but the claim

is made that it is improper for an investigator to place his *conclusions* before the public as *facts*, however certain he may feel of their correctness.

The lesions caused in cattle by the invasion of *B. abortus* are too vaguely and indefinitely recorded in veterinary literature to afford a secure basis for the statements of Birch concerning them. The contention that this or that has been proved, and such and such are established facts, and that anyone who dissents is therefore wrong, is not scientific discussion. It does not advance the truth. The most effective method to further the truth concerning the pathogenicity of *B. abortus* in cattle is to record faithfully the lesions attributable to it, along with the underlying facts which lead the investigator to believe that the lesions in question are the result of the invasion by this bacillus. Regulatory officers, clinicians, breeders and others cannot formulate sound methods for controlling *B. abortus* infection until the lesions due to it and the phenomena caused by such lesions have been adequately described.

Certain simple rules of logic must always apply to scientific research. Briefly, the premises must be true and the conclusions relevant and direct. Placing the argument of Birch on the specificity of contagious abortion in concise form, it reads:

Major premise: Contagious abortion is the cause of the symptoms and lesions (as quoted above).

Minor premise: These symptoms and lesions (as quoted above) prove the presence of a specific infectious disease.

Conclusion: Contagious abortion is a specific infectious disease.

The question concerning the character of any lesions and symptoms which may be caused by *B. abortus* and whether any of these lesions and symptoms are specific to *B. abortus* infection, is of great scientific importance. It acquires practical or clinical importance when it is desired to formulate measures for the control of abortion. Whether *B. abortus* does or does not cause a specific infectious disease may, however, have nothing to do with the economic importance of *B. abortus* infection. For instance, rabies is clearly a specific infectious disease, but it causes very trivial losses to cattle breeders when compared with traumatic pericarditis, in which non-specific pathogenic bacteria enter the tissues through the wound. Each is preventable, but the methods of prevention differ fundamentally in the two cases. The same thing must undoubtedly apply to the control

of abortion. Scientific therapeutics largely depends upon whether the disease is or is not of a specific character.

BIBLIOGRAPHY

[1]Moore, V. A.: Pathology and Differential Diagnosis of Infectious Diseases of Animals. (1916), pp. 2-3.
[2]Adami, J. George: The Principles of Pathology, 2 ed., 1, p. 413.
[3]Smith, Theobald: A characteristic localization of *Bacillus abortus* in the bovine fetal membranes. Jour. Exp. Med., xxix, (1919), p. 452.
[4]Birch, R. R. & Gilman, H. L.: A study of Bang abortion disease in cattle. Rpt. N. Y. State Vet. Coll. Corn. Univ. 1922-23, pp. 62-155.

SHORT COURSE FOR VETERINARIANS

The tenth annual meeting of the Wisconsin Veterinary Medical Association will be held at Madison, January 27 to 30, 1925. The headquarters of the Association will be at the Park Hotel, opposite the State Capitol. By popular request of the members, the third annual short course for Wisconsin veterinarians will be given during this week at the College of Agriculture.

According to the program, Tuesday and Wednesday, January 27 and 28, will be devoted to the meeting of the Association and to the reading of papers by members. An especially interesting feature of this program will be a motion picture film of the recent outbreak of foot-and-mouth disease in California. The film was taken under the direction of the United States Department of Agriculture, Bureau of Animal Industry. It shows the activities of inspectors in charge of the control and eradication of the disease in the restricted area.

All day Thursday has been reserved for the short course program. At this time Dr. H. S. Murphey, Professor of Veterinary Anatomy at the Iowa State College, the principal out-of-state contributor, will give a demonstration on "The Oestrus Cycle of the Cow." Eight members of the University of Wisconsin faculty will also contribute to the program. A clinical program is to be held on the last day, January 30. Interesting cases for the surgical, medical, and small animal clinics have already been secured.

Dr. F. B. Hadley, of the University of Wisconsin, who has charge of the short course, says: "The course is planned for graduate veterinarians only. Its aim is to bring to the notice of the practitioner in the field the results of recent investigations and research studies in the laboratory. By this means the practitioner can secure first-hand information relative to discoveries in the science that he practices."

DEMODECTIC MANGE OF THE GOAT IN THE UNITED STATES

By ELOISE B. CRAM

Zoological Division, U. S. Bureau of Animal Industry, Washington, D. C.

Demodectic mange of the goat appears to be very rare in the United States. Recently, however, a case has come to light at Rochester, Minnesota, in a Toggenburg goat.

The goat, a pregnant doe, had been obtained by the owner from a St. Louis herd several months previously. The coat was "dead looking" and in brushing it the owner discovered numerous nodules on the shoulders and other parts of the body.

FIG. 1. *Demodex caprae.* Mass of material pressed out of nodules of skin. Natural size

These were at first small pimples; they were treated with a tar preparation but continued to grow larger, some to the size of shot and others to that of a bean. The doe was restless and continually tried to rub herself; she was thin and shaggy in spite of good food and pasture. The owner found that upon pressure each nodule would produce what appeared to be a "grub."

Received for publication, July 23, 1924.

After writing to the Zoological Division for information, at the suggestion of the Division she sent in some of the "grubs," saying they were not so large as some she had previously obtained. These (fig. 1) were cream white in color; their shape varied from small indefinite masses to "worms" 5 to 20 mm. in length. Some were quite smoothly rounded, others were flattened. Upon

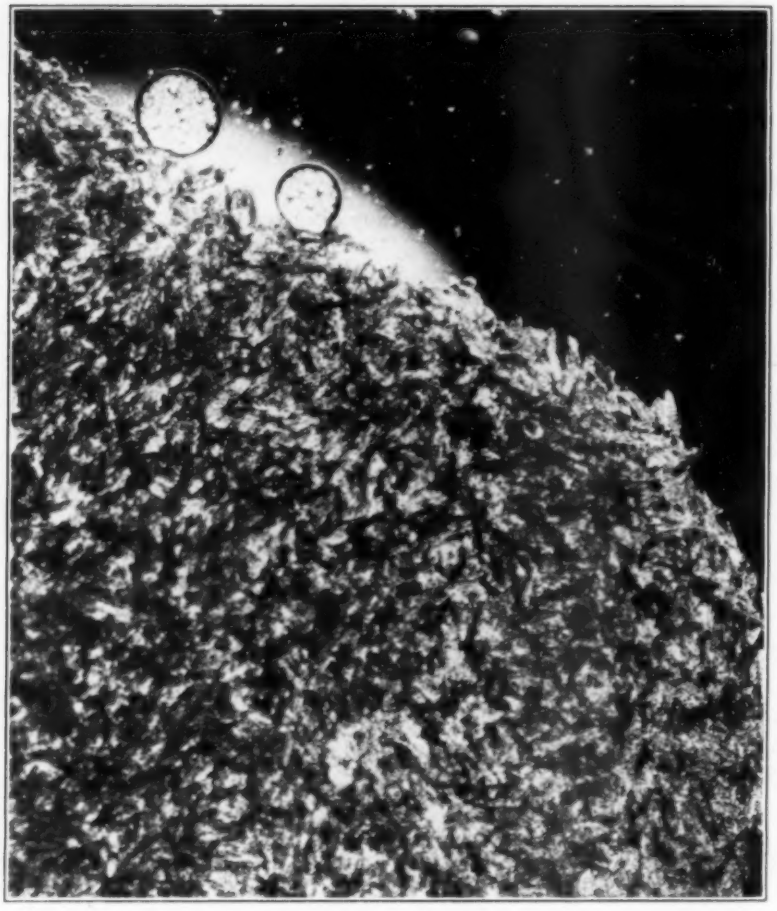

FIG. 2. *Demodex caprae.* Mass of mites as seen under microscope. x about 22

examination under the low power of a microscope, it was immediately seen that there were numerous demodectic mange mites floating around in the fluid, and upon making a press preparation of one of the smallest of the worm-like forms, it was found to be composed of a solid mass of these mites and their eggs (fig. 2). A rough count showed that there were at least 3,700 mites in

that small amount of material and that one of the larger pieces would therefore contain about 15,000.

The mites (fig. 3) varied considerably in size, the length being from 224 to 315 μ and the width from 50 to 58 μ. The abdomen measured a little less than half the total length. Numerous immature forms were present in addition to the adults. The eggs also varied in size and shape, from 87 to 105 μ in length and from 45 to 57 μ in width. These measurements of both mites and eggs exceed those given by Railliet (1895) in his original

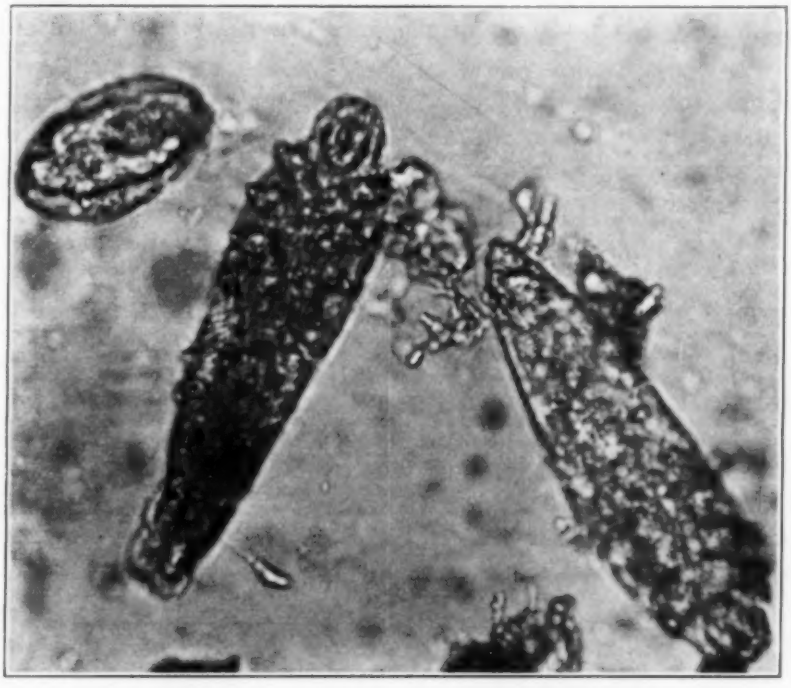

FIG. 3. *Demodex caprae.* Individual mites and egg. x about 250

description of *Demodex* from the goat, but Hirst (1919) has pointed out in a general discussion of the genus that the size of the mites may vary very greatly. The dorsal spines (fig. 4) on the capitulum appear as minute refractive spots; under high power they are seen to have a rounded base and short stout point. They measure about 26 μ, from the anterior margin of the rounded base to the tip as seen in dorsal view. The penis of the male is strongly chitinized and is about 28 to 31 μ long; the male sexual orifice is on the dorsal surface of the cephalothorax, about 40 μ from the anterior end of the mite (fig. 4) and slightly to the

left of the median line. The female sexual orifice is on the ventral surface at the posterior end of the cephalothorax, 99 to 108μ from the anterior end of the mite (fig. 5).

To the knowledge of the present writer, no case of demodectic mange has until now been reported from the goat in the United States. In Europe it has been reported in several instances. The first was that of Niederhäusern, in 1881, at Berne; he found only immature mites in the pustules on the body of the goat. Nocard and Railliet recorded a second case, from Alfort, in 1885, and the latter described the mite as *Demodex folliculorum* var. *caprae*. Other instances of the disease appearing in goats are

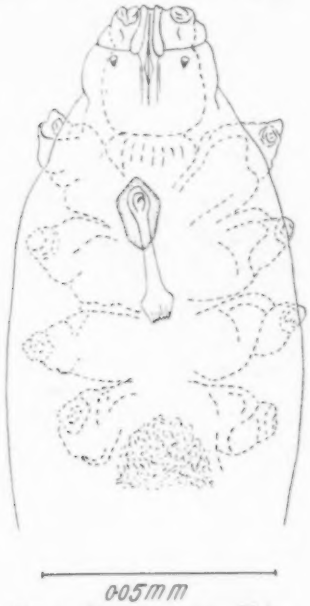

FIG. 4. *Demodex caprae*. Male. Dorsal view

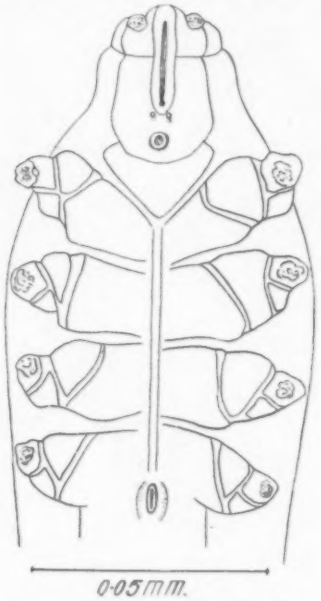

FIG. 5. *Demodex caprae*. Female. Ventral view

reported by Bach, in Thun, in 1893; by Prietsch, in Grimma, in 1905; and by Galli Valerio, in Lausanne, in 1923. Kitt (1892) and Rissling (1910) found the evidences of the disease in pieces of goat hide, the upper side being normal in appearance but the under surface of the skin showing numerous small white knots containing the mites. During the tanning these nodules show up as scars or a hole appears at their site; as a result the skin loses considerably in value.

The nodules, formed in the skin of the goat by the stopping-up of the excretory duct of the sebaceous glands, have been described as being the size of a hemp seed, pea or walnut. The

contents which appear on pressure have been described as firm, gray or white in color, verminous in shape, and composed of a mass of mites and sebum. Galli Valerio pictures a microscopic view of one of the masses. The nodules appear chiefly on the neck and shoulders but may be scattered over all parts of the body. The hair at these places may be roughened and the skin thin or perforated; on the other hand the nodules may be deep in the skin and found only by careful searching, if at all, during the life of the goat. Bach in his case report and Martin (1913), in a general discussion of the disease, state that the irritation may be very great, so that the goat is restless and in spite of a good appetite does not thrive. On the other hand Rissling states that the skin of a goat so affected gives no evidence that the general state of health has been disturbed; one finds a vigorous skin blemished by the knots, whereas a sick goat leaves a shaggy weakened skin. That the disease may present a puzzling diagnostic problem is indicated by Galli Valerio, who states that the owner of the goat in the case described by him had made a diagnosis of tuberculosis.

It is seen that the present case of mange in the goat in the United States agrees in its nature with the cases reported from Europe. That the goat in this case is a pregnant doe is in accordance with the observations of Rissling and of Martin, that the disease is seen most often in pregnant goats. However, other goats are susceptible to this form of mange; in the cases of Nocard and Railliet, Bach and Prietsch, the goats were bucks. Wherever mention is made of the breed of the goat affected it has always been a Saanen (Bach, Rissling, Galli Valerio and Martin). The case under consideration in the United States is a Toggenburg, which is also a Swiss goat and of the same milking type as the Saanen.

Concerning the spread of the disease, opinion seems to vary. Bach states that after 2½ or 3 months of cohabitation with the diseased goat, no others showed evidences of mange, but Rissling says that in some villages in Europe the majority of the goats are affected, whereas in others the disease is unknown. In the case described by Prietsch a young buck was being raised in close association with a dog which had mange; Prietsch therefore considered that the appearance of mange in the goat proves the transmission of the disease from dog to goat. This is not necessarily established by the coincidental appearance of the mange in both animals. Experimental work would be necessary to

prove such transmission, and so far this is lacking. It is very difficult, if not impossible, to transmit mange experimentally from one dog to another, and in this case hosts of two distinct species are involved. Demodectic mange mites are difficult to differentiate, and the factors in the production of mange are not well understood. Chandler (1923) has discussed the subject of speciation and host relationships and favors the trinomial system of nomenclature, using varietal names, for closely related forms of parasites, often morphologically indistinguishable, found on different hosts, and the demodectic mange mites are such parasites. On the other hand, Hirst (1919) considers the demodectic mite of the dog and that of the goat as distinct species, *D. canis* and *D. caprae*, rather than as varieties of *D. folliculorum*.

The hope for successful treatment of mange in the goat appears to be slight. After close clipping of the hair and the opening of pustules and clearing out of their contents, Bach used a mixture of Peruvian balsam, liniment styrax and creolin to make 30 parts, glycerin 80 parts, mixed to make a glycerin oil and applied once daily. Some nodules disappeared, leaving hairless areas; others became smaller but their contents continued to show living mites, so that the treatment was unsuccessful. Martin suggests the trial of treatments that have been used with varying results for cattle mange. The pustules, after their contents have been removed, are washed well with soft soap; then the following antiseptic preparation is rubbed in: ten per cent creolin ointment, Helmerich's ointment, or sulphur ointment; or one may use Gmeiner's formula (caraway oil, 10 grams; alcohol, 10 grams; castor oil, 150 grams), or an ointment of sulphurated potassa or a 5 per cent solution of the same. He also states that encouraging results have been obtained with tobacco leaves or the concentrated tobacco juice from factories, used diluted 1 to 100, with a mixture of petrol (1 part) and coconut oil (2 parts).

Prietsch had no success in attempted treatment with various remedies and Hutyra and Marek (1914) say of demodectic mange of the goat, "Healing does not result even after appropriate treatment." Quitman (1921) states that he has had splendid results in demodectic mange of dogs by the thorough rubbing in of castor oil; this simple treatment might prove of value in the disease of the goat.

EBERTHELLA VISCOSA (BACT. VISCOSUM EQUI); ETIOLOGICAL FACTOR IN JOINT-ILL

By ETHEL M. SNYDER, *Lexington, Ky.*

Department of Veterinary Science, Kentucky Agricultural Experiment Station, University of Kentucky

INTRODUCTION

Search of the literature reveals the fact that very few references to *Eberthella viscosa*, which, under the old system of classification, was known as *Bacterium viscosum equi*,* are to be found. Possibly the first time that the organism was encountered was in the Transvaal, in 1902, when it was isolated by Theiler[1] from cases of pyemic nephritis in a horse and a mule. However, it was not until later that it was studied by Meyer[1] and given the name of *Bacillus nephritidis equi*.

In the annual report of 1906, from the Serum Institute of Amsterdam, an organism, while not named, was described as having been isolated in pure culture from the blood, spleen, and kidney of a foal that died of joint-ill. This organism is described in sufficient detail to enable it to be recognized as the one in question. In the same publication, in 1911, Van Straaten[2] reports the isolation of the same organism from a case of nephritis purulenta disseminata of a foal.

B. Bang[3] isolated it from a case in which purulent nephritis and arthritis were found co-existing with worm thrombi in a foal, older in age than at which foals usually succumb to joint-ill.

M'Fadyean and Edwards,[4] in London, report the isolation, from seven cases of joint-ill, of a bacillus which they call *Bacillus nephritidis equi* because of its resemblance to the organism isolated by Theiler.

Otto[5] and Langhoff,[6] working separately, report the presence of the bacillus in brood mares and foals in Germany, in 1922 and 1923.

Magnussen,[7] however, undoubtedly has made the largest contribution, having carried out a thorough and exhaustive investigation in 1915-18, establishing the organism as one of some moment

*This change in name was necessary in order to comply with the new classification of organisms as arranged by a committee of the Society of American Bacteriologists. Bergey's "Manual of Determinative Bacteriology" has been published as a key for the identification of organisms and while *Eberthella viscosa* is not included in the first edition of the manual it will appear in the revised edition now being prepared.

Approved for publication by the Director, Kentucky Agri. Exper. Station. Received for publication, July 31, 1924.

in relation to joint-ill in foals in Sweden. He not only isolated *Eberthella viscosa* but reproduced the disease, and has given us our most definite information concerning the morphology and cultural characteristics of the organism.

As far as can be determined this paper constitutes the initial report of the appearance of *Eberthella viscosa* in the United States, except as it has been reported in an informal way from this laboratory.[8]

Discussion

As a part of the investigation of "The Pathology and Bacteriology of the Reproductive Organs of Mares and their Relation to Sterility,"[9,10] several dead foals have been cultured. From two* of these foals, which died of joint-ill, *Eberthella viscosa* was isolated in pure culture.

This organism was isolated for the first time in the spring of 1922, and it is this case that was reported verbally, by W. W. Dimock, at the American Veterinary Medical Association meeting in St. Louis in August, 1922. Because of ignorance on the part of the author as to the utter lack of resistance of the organism to light, etc., the culture was lost before sufficient work had been done to warrant any publication of its having been found, other than a mere mention of it in the Annual Report of this Experiment Station. It was not until the next foaling season, that of 1923, that the organism was again isolated and the work of identification resumed.

Eberthella viscosa (*Bact. viscosum equi*) has been so diligently studied by Magnusson as regards its pathogenic properties, the lesions produced, its morphology and its cultural characteristics, that no attempt has been made at this time to do any further research along these lines. What work has been done has been for the sole purpose of verifying the identity of the bacillus and to acquaint ourselves first hand with its behavior.

The findings in this laboratory have in most respects coincided with those of Magnusson and in several instances he has so accurately described the character of growth on certain media that direct quotations from his work have been employed in giving the cultural characteristics of the organism in this paper.

Isolation

The isolation of *Eberthella viscosa* seems to be accomplished

*Since this paper was prepared, *Eberthella viscosa* has been isolated from two more foals, making a total of four. It is interesting to note that three of this number have come from the same stud.

without difficulty, if the organism is present, inasmuch as it was first encountered unexpectedly in a search for a streptococcus which was occupying an important place in our bacteriological investigations of genital infections in equidae. The bacillus grows readily on ordinary laboratory media and by streaking material on agar plates, it can easily be fished off in pure culture. Its outstanding characteristic, that of slime production, is a considerable aid in distinguishing its colonies from those of any other bacterium.

Resistance

While *Eberthella viscosa* is easily isolated it is not so easily kept alive. Its slime production seems to be of no avail in protecting it against adverse conditions. It is with astonishing regularity that the organism dies out on the tenth day, when grown at 37° C. on ordinary beef-agar slants and kept in the dark at room temperature. Its existence is even shorter if exposed to the sunlight for ever so short a time, being killed in from 10 to 15 minutes. However, its life can be prolonged by growing it in gelatin stabs at room temperature, always keeping it away from the light. Under such conditions it has been transferred successfully at the end of 3 or 4 months, a great advantage in keeping stock cultures, as it does away with the necessity of transferring every 8 or 9 days. Inasmuch as there was a supply of chopped-meat medium on hand in the laboratory, this was tried and found to be almost as well adapted to preserving the vitality of the organism as gelatin.

Morphology

Rods, very short, with rounded ends, measuring 0.3 to 0.4 x 0.4 to 0.8 microns (considerably smaller than described by Magnusson). They occur singly and in pairs. Non-motile. Stain readily with ordinary dyes and are Gram-negative. No spores produced.

Cultural Characteristics

Gelatin colonies: Are of a grayish-white color and are translucent, with the appearance of dewdrops. Both surface and subsurface colonies are round, and are about the size of a pinpoint.

Gelatin stab: Moderate growth along line of inoculation. No liquefaction.

Agar colonies: These are best described by H. Magnusson[7] when he says: "On agar plates the colonies are very characteris-

tic, being semi-solid and not easily separated. They are tough and ropy. When one tries to transfer them, the whole colony comes along with the needle. They are grayish-white in color. The submerged colonies are smaller than the surface ones. They are spherical, and when slightly magnified under the microscope they show a darker central part, which is often stellate. The surface colonies are a little flattened, but are nevertheless almost hemispherical. They are of a mucoid, glossy, gray color, and under the microscope have a darker nucleus and a wide clear border zone. When one puts the platinum needle into such a colony and then withdraws it slowly, part of the colony adheres to it and extends itself like an elastic band before accompanying the needle or dropping back again into the medium."

Agar slant: When thinly seeded the colonies are isolated and closely resemble those of agar plates; they do not spread or coalesce. When thickly seeded the entire surface of the slant is covered with a grayish-white, viscid growth, while the water of condensation has changed to an opaque, mucus-like mass, with much white growth at the bottom.

Bouillon: (quoted from Magnusson) "In ordinary bouillon a good growth shows within 24 hours. A sediment appears, which settles at the bottom of the tubes. By shaking the tubes well the whole culture mass ascends as a slimy cone into the liquid above. In fact, the whole bouillon mass appears viscous, even that portion which seems to be quite clear to the naked eye. Frequently there is observed a slight superficial membrane which collects specially at the point of contact with the glass. One frequently finds also small, slimy, gray, bacterial deposits collected along the walls of the glass."

Potato: No visible growth.

Litmus milk: Becomes slowly acid, while whole mass becomes viscid and slimy.

Indol: Not formed.

Fermentation: No gas in carbohydrate media. Acid formed in dextrose, lactose, maltose, mannite, levulose, sucrose, xylose and in salicin after several days. No acid formed in dextrine, dulcite, arabinose, sorbitol, rhamnose and inositol.

Optimum temperature: 37° C. Develops slowly at room temperature.

Pathogenesis: Pathogenicity tests on *Eberthella viscosa*, performed in this laboratory, have been limited to subcutaneous and intraperitoneal injections in rabbits, guinea pigs and rats, all of

which were negative; and a subcutaneous injection in a mare. The results of the latter are given in detail below.

Three cubic centimeters of a 24-hour culture, washed from an agar slant, was injected subcutaneously into the neck of a mare on May 25, 1922.*

Twenty-four hours following injection the animal had become very stiff and was indisposed to move. Swellings were noticeable at the point of injection, right half of mammary gland, right hock and fetlock.

The swelling at the point of injection was raised about 2 inches, was 6 to 8 inches in diameter and was exceedingly hot and painful. The right mammary gland had swollen to about four times its normal size, was very firm, but not painful. The joints in the right hind leg were involved. The hock joint capsule was distended, and the fetlock was involved from the lower third of the metatarsal bone to the hoof. Neither of these joints seemed painful to palpation, but the animal on being made to walk would not flex the joints of any leg any more than necessary. This gave her a stiff-legged gait. When the joints were flexed they produced a sort of crackling sound.

Due to the swelling in the neck the mare was not inclined to eat and went off feed, and it was several days before she was able to get her head down to graze.

By May 30 the general condition of the animal had greatly improved. The swelling on the neck had receded to about the size of one's fist. The mammary gland, which was still large, was only about twice normal size and was gradually becoming softer. The swellings in the joints of the right hind leg had gone down considerably but were still noticeable. The animal moved with ease and appeared to have no pain in any part of the body other than the neck. It was only a few days later that the mare was again apparently normal.

About a year later the second strain of *Eberthella viscosa* was isolated and injected into another mare, with approximately the same result .

No young foals have been available for experimental purposes, so this phase of the work has necessarily been omitted.

Conclusion

Not having had more than a dozen foals for examination and many of them dying from causes other than joint-ill, the extent

*The injection and the observations of its effect on the mare were made by Dr. A. J. Steiner.

of the observations on the etiology of this disease has been limited, and while no great importance can be attached to the isolation of *Eberthella viscosa* from two cases, it justifies noting that the infection exists in America as well as in foreign countries. It remains for some one to investigate and determine to what extent it exists.

REFERENCES:

[1]Meyer, K. F.: Experimental studies on a specific purulent nephritis of equidae. Transvaal Rpt. Govt. Vet. Bact. 1908-1909, p. 22.

[2*]Van Straaten: Over een pyogeenen bacil bij een veulen. Verslag vande Werksaamheden der Rijksseruminrichting, 1911, p. 34.

[3*]Bang, B.: Strongylose eller Sclerostomiasis hos fol. Maanedskr. f. Dyrl., Bd. xxv (1913), p. 9.

[4]M'Fadyean & Edwards: Observations with regard to the etiology of joint-ill in foals. Jour. Comp. Path. & Ther., xxxii, (1), p. 42.

[5]Otto, Paul: Streptokokken und Bact. pyosepticum viscosum equi Infectionen bei Stuten und Fohlen. Deut. Tierärztl. Wchnschr., May 20, 1922.

[6]Langhoff, L.: Infection mit dem Bact. pyosepticum viscosum equi unter besonderer Beruecksichtigung der makroskopischen pathologisch anatomischen Erscheinungen. Berl. Tierärztl. Wchnschr., August 2, 1923.

[7]Magnusson, H.: Joint-ill in foals: Etiology. Jour. Comp. Path. & Ther., xxxii, (3), p. 143.

[8]Rpt. Ky. Agr. Exp. Sta. 1922, p. 46. 1923, (in press.)

[9]Dimock, W. W., & Snyder, E. M.: Bacteria of the genital tract of mares and the semen of stallions and their relationship to breeding efficiency. Jour. Amer. Vet. Med. Asso., lxiv (1923), n. s. 17 (3), pp. 288-298.

[10]Dimock, W. W., & Caslick, E. A.: Sterility in mares. Jour. Amer. Vet. Med. Asso., lxv (1924), n. s. 18 (2), p. 141.

*Reference to these articles was made by Magnusson, Jour. Comp. Path. & Ther., xxxii, p. 143. Original not examined by author.

CIVILIZATION PLAYING OUT

One of the most significant proofs of the decline of the American language appears in a recent dispatch from Kansas City about the traction test at the live stock show at that place. We are told that a team of dapple gray Percheron horses outpulled a team of army mules from Fort Leavenworth, although the latter were the heavier by 160 pounds.

That means, of course, that the mules were not properly addressed, exhorted, objurated, vituperated. The thing was tried out in the army long ago. Whenever a man of reserved or pious speech was set to driving them, the mules balked. But when his place was taken by someone with a copious gift of language, whose remarks would best be expressed in a family newspaper with whole lines of three-em dashes and exclamation points, the brutes buckled to business in a way that would have yanked the bottom out of a Chickahominy swamp if only there had been a log chain around it.

The fault at Kansas City was not in the mules, but in their drivers. It was not quadrupedal bone and brawn that failed; it was the weakness, the effeminacy, of American speech that lost the day. This country is slowly but surely going to the dogs.—*The Washington Post.*

EGGS OF ANKYLOSTOMA CANINUM[1]

By HOWARD CRAWLEY, *Philadelphia, Pa.*

According to the current text-books on parasitology, the eggs of *Ankylostoma caninum* measure 74 to 84 microns for the length, by 48 to 54 microns for the breadth. Doubtless the authority for these figures is some one original publication, but I have not been able to locate it. It must, however, date prior to 1895, since Railliet's *Traite de Zoologie Medicale et Agricole*, published in that year, gives the figures quoted above.

At the laboratory of the Pennsylvania Bureau of Animal Industry, examinations of dog feces are made as a matter of routine, and a few casual measurements of hookworm eggs brought out the fact that they are conspicuously smaller than the orthodox figures. The suggestion then presented itself that the usual dog hookworm in Pennsylvania was not *Ankylostoma caninum*, but *Uncinaria stenocephala*, the dimension of the eggs of which are given in the same texts as 63 to 76 microns long by 32 to 38 microns broad. But in the first place, neither did these figures fit the eggs which were being found, and in all cases where it was possible to recover the worms, they were *Ankylostoma caninum*.

In consequence, the study to be herein described was undertaken.

In all, 551 eggs were measured, these being derived from twenty dogs. The data obtained are set forth in table I, the first column giving the number of the dog, the second the number of eggs, the third the average size in microns, the fourth the extremes of length, and the fifth the extremes of width.

In the case of dog 5, the eggs were obtained from two female worms collected postmortem; in all other cases they were recovered from the feces. Leaving this out of account for the moment, and also those from which but few worms were measured, it is to be observed that the source has little influence on the size of the eggs. The greatest mean length was 62 microns, from dogs 2 and 12, the least 59 microns, from dog 9. The difference here is negligible. It may further be noted that both of these dogs came from the same kennel, and hence presumably their parasites were of the same strain.

[1]Contributions from the Bureau of Animal Industry of the Pennsylvania Department of Agriculture. New Series No. 19. Received for publication, August 7, 1924.

By adding together the lengths and breadths of all the eggs, and dividing by their number, 551, the mean size obtained was:

TABLE I

DOG	EGGS	AVERAGE SIZE	LENGTH	BREADTH
1	50	61 by 37	70—55	40—33
2	50	62 by 39	70—56	46—35
3	18	60 by 38	69—55	43—33
4	25	61 by 40	69—56	43—38
5 worm 1	13	65 by 37	71—61	40—35
worm 2	13	65 by 36	70—61	37—35
6	1	65 by 37		
7	34	60 by 39	70—53	43—36
8	25	60 by 40	65—52	43—37
9	25	59 by 39	65—54	43—37
10	25	60 by 40	65—50	47—36
11	25	60 by 38	65—55	46—35
12	50	62 by 37½	70—55	40—35
13	2	53 by 35	54—52	37—33
14	7	62 by 38	66—51	43—36
15	6	63 by 37	72—60	40—34
16	11	60 by 39	68—55	42—36
17	106	60 by 39	65—55	45—35
18	1	61 by 35		
19	60	60 by 38	71—53	44—33
20	4	61½ by 38	67—56	39—37
Total	551			

Length—60.8 microns.
Breadth—38.5 microns

The extremes for all of these eggs were as follows:

Length—72—50 microns
Breadth—47—33 microns

If these figures be compared with those published in the texts, it will be observed that the maxima of the former are less than the minima of the latter, both for length and breadth.

It is to be noted that the mean length is 60.8 microns. The eggs were then divided into two groups—the long, those measuring 61 microns or more, and the short, measuring 60 microns and less. There were 258 of the former and 293 of the latter. The mean dimensions were as follows:

Long eggs—63.9 by 38.2 microns
Short eggs—58.1 by 38.7 microns

This shows that the short eggs are not only relatively, but actually, broader than the long, a condition which seems to hold for nematode eggs generally. It results from this that the actual volumes of the eggs do not vary so much as the lengths.

In dog 5, the eggs were taken directly from the worms, two in number. These eggs averaged longer and narrower than those obtained from the feces. The shell was very thin, and while at least some of them had been fertilized, the oldest found was in the four-cell stage. It may also be noted that the female hookworm contains but few eggs, probably not above twenty-five.

As they occurred in the feces, the eggs were in all conditions of development, from those in the two-cell stage to those in which there was a motile embryo. Embryos were also often found. This, of course, is no more than what is to be expected, the eggs evolving very rapidly in warm weather. When kept in the ice-box, however, development was nearly or quite checked.

Typically, the egg of *Ankylostoma caninum* is a symmetrical ellipsoid, and does not depart greatly from this shape. Not infrequently, however, one or both sides are somewhat flattened, and at times the ends are blunted.

Conclusion

The average dimensions of the eggs of *Ankylostoma caninum* are 60.8 microns long by 38.5 microns broad. The extremes for the length are 72 to 50 microns; for the breadth 47 to 33 microns. These figures, based on measurements of 551 eggs, show that the published figures are far too large.

AIRPLANES DISEASE CARRIERS

Texas is enforcing quarantine restrictions against airplanes. It will not let them rise from or land in territoty infected with the foot-and-mouth disease. A bulletin issued by officials fighting the plague says airplanes spread the disease.

This arouses serious thought as to the spread of infectinos of various kinds by airplanes when flying becomes a common mode of transportation. It will greatly complicate the problem of enforcing quarantines. Ignorant or irresponsible aviators may take the air anywhere and alight anywhere else, regardless of quarantine rules.

It is surprising, to hear that there is so much danger from this source. Fresh air and sunlight are the deadliest foes of disease germs, and surely aviators and airplanes get their full share of those commodities. It is hardly conceivable that many disease germs clinging to the outside of a plane, at least, would be alive after a long flight in the upper air. The flyer and his cargo may be carriers of infection but sterilization of them should be a comparatively simple matter.—*Reading (Ill.) Tribune.*

EARLY CONDITIONS OF THE VETERINARY PROFESSION IN THE HAWAIIAN ISLANDS[1]

By A. R. Rowat, *Honokoa, T. H.*

Gentlemen, for me this is a very happy moment. To be able to attend a meeting of this sort at this time is a realization of past dreams, but to be placed in the seat of honor, as your president, is one thing that I had not thought, nor dreamed of. The respect and honor that has been shown me in placing me in this office is very gratifying and fully appreciated, more fully than I can find words to express. It is my ambition that this Association shall get off to such a good start that it will be recognized with respectful approval by all, and with the able officers chosen to assist, and the roster of charter members that we have for a beginning, I can see only success for the future.

Seeing that I am the oldest practicing veterinarian in this territory, and also, I think I can safely add, the oldest in years, it has been suggested that I give a sketch of conditions as they were during my earlier days in Honolulu, and also a brief history of the veterinary profession in these Islands. This I will endeavor to do as well as my memory can serve me.

First Glimpse of the Islands

My first glimpse of the Sandwich Islands, Sept. 30, 1887, was not a very cheerful one. Old Koko-head loomed up against the sky-line very bleak and barren-looking, and nothing attractive was to be seen till Diamond Head was passed, when suddenly the shore-line of Waikiki, the Plains, and Honolulu Harbor came into view which, with Pearl Harbor and the mountains in the distance, made a most beautiful and attractive sight, especially as it was early morning when we entered.

The city was so overgrown with trees that little of it could be seen from the harbor—there were no sky-scrapers in those days to compete with the trees—so I asked a passenger, whose home was in the Islands, if we would have far to drive before reaching Honolulu, and was surprised to learn that what I saw (or rather did not see) was the capital. One thing I remember quite well: They took two dollars away from me before they would let me land. That was a hospital tax that all coming to the Islands had

[1]Presented at the first annual meeting of the Hawaiian Veterinary Medical Association, Honolulu, T. H., Oct. 20, 1924.

to pay before landing. I found out later that if I wanted to leave the country I would have to get a permit, that also cost two bucks, so you see they had you both coming and going. These were both good customs, but seemed a bit peculiar at first to strangers.

Honolulu had, at that time, a population of less than 20,000. Where the most pretentious business houses stand today there were small, one-story, wooden shacks at that time; even Fort Street was without sidewalks in many places except dirt. The streets were mostly paved with coral, and King Street from the city to Kaikiki was a long white road that glistened in the sunlight and dazzled one's eyes. The streets and highways belonged to the individual, there were no traffic laws, no street cars, nor automobiles to interfere with one's progress, but notwithstanding their apparent drawbacks you would see very few persons walking. Hacks were plentiful and their rates reasonable, and private saddle and driving horses were owned by men, women and children, of all classes and stations in life.

Pleasure Before Business

Amusements were few and what we had we made for ourselves, and at that got along quite well, no one suffering from languor. The motto apparently was, "If business interferes with your pleasure, shut up shop." There was a police force in those days but some extraordinary didos could be cut without fear of arrest unless you were foolish enough to awake the cop on his beat, for he, like the rest of the population, took life without seriousness. It was not unusual to see him carrying a box for a seat, and an umbrella to protect him from the sun. You can see from this the lazy, care-free life that was led; if you wanted a day off you simply took it, no matter whether you were boss or servant; if a clerk or employe was thirsty, he just put on his hat, walked out and quenched his thirst, and it was really amusing at times to notice how much quenching some thirsts took. This was all quite curious to me, after having just come from the hustle and bustle of the East.

To be sure, it was a bit lonely to be marooned 2000 miles away from shore without one of your own profession to speak to. The members of the medical profession were, however, very kind and hospitable, and my association with them made up in a great measure for the loss of companionship with those of my own vocation. Those conditions lasted for about three years, at

which time a complete change took place, a change that was quite gratifying to me. At this time our present vice-president and colleague, Dr. William (Honolulu Bill) Monsarrat, appeared in my midst, and I am glad to note after all these years how kindly the lapse of time has dealt with him; it has apparently rested on his shoulders as lightly as butterfly wings; he is still the same good-hearted rollicking chap that he was then. You see I now had company. It is said that two are company but it takes three to make a crowd, not so in this case, however. You can take it from me that old "Doc" Monsarrat is a whole crowd in himself at all times and the pleasure of his company in those early days will never be forgotten.

Other Veterinarians Arrive

My practice was not confined to Honolulu and the island of Oahu. I had frequent calls to Kauai, Maui, and Hawaii, and believe me they were no pleasure trips, as the means of travelling at that time were crude indeed, compared with the luxurious facilities and accommodations that are to be enjoyed at the present time. Monsarrat and I were not to be allowed to dominate the field indefinitely. As time went by other qualified men dropped in and opened their offices. Dr. Elliot came and located on Hawaii, then followed Dr. Schnider, Dr. Shaw, Dr. Fitzgerald, Dr. Katsanuma, Dr. Glaisier, Dr. Norgaard, Drs. L. N. and L. E. Case, Dr. Golding, and most recently Dr. Browning and Dr. Onnissimenko; in addition to the above, we also have Dr. Shutte in the city of Hilo. In this connection I must also mention the many veterinarians that have, for the past twenty years, been connected with the various army posts on the island of Oahu; I regret not to have become well enough acquainted to mention them individually; I will add, however, that a casual acquaintance with a few of them has afforded me a great deal of pleasure, and I hope through the medium of this Association to be able to become well acquainted, and to keep in touch with all veterinarians in the territory.

It is a pleasure to relate that the veterinarians who have come to this country have all been men of high character and intelligence, men who associated with each other without any bickerings, or active professional competition. I can remember of one occasion only where there was rivalry, and that was not professional. About the year 1897, Dr. Monsarrat and Dr. Shaw were engaged in testing of dairy cattle, and I represented the dairymen

at all autopsies. I had, as an assistant at the time, a man by the name of Carr. He had studied at Copenhagen but was not a graduate. After a day's work making postmortems, someone suggested a beer, and this led to a challenger that the two shortest men in the party could drink more beer than the two tallest. You all know the length of our friend, "Doc" Monsarrat. Well, the combined length of him and Carr was something over fourteen feet. Naturally Shaw and myself seemed to have a very formidable task on our hands. All I can remember of the result is that at the end of the time limit all contestants were on their feet and going strong; decision, a draw. No ill will and no more defis.

The history of the veterinary profession in these Islands dates back to 1884, at which time my predecessor, Dr. James Brodie, arrived and opened an office. He was brought here on the solicitation of King Kalakaua and his cabinet, for reasons that I will now relate. In the early eighties, the live stock interests, or rather, I should say, the horse stock interests of the Islands, were menaced by the presence of a disease that had appeared in the public stables, and insiduously spread and infected many animals belonging to private owners, and eventually extended to other islands where it caused severe losses to the horse stock of many sugar plantations.

Control of Glanders Started

There was no one here at that time who professed to know anything about the nature of this trouble, or who felt competent to make a diagnosis, except a couple of charlatans who were reaping a rich harvest through treating the sick animals and accomplishing many wonderful cures. Live stock owners, however, eventually became so much alarmed over the spread and fatality of the malady that they appealed to the King and his government for relief, the result being that Dr. Brodie (who was then in partnership with Prof. Williams) was sent for to take charge of and handle the situation. On his arrival he had little trouble in making a diagnosis of glanders, as the cases were more than numerous. His first move was to have laws enacted whereby he could place a scheme in operation for the eradication of the trouble.

The main points of these laws were that all condemned animals had to be shot and buried at a place set aside for that purpose, and a penalty placed on all persons found guilty of neglect in

reporting suspicious cases. With this to back him the doctor set to work to slaughter in a rather wholesale way, and that was the time that he was bedamned. One owner, who was about to lose $10,000 worth of horses and who had been instrumental in having a doctor sent for, took Brodie aside and said, "Hell, Doc, this is not fair. We did not send for you to kill our horses, we want you to cure them." But the doctor, a mild, good-natured fellow, went about his work in a systematic way, killing diseased animals and making enemies, but though he lived here for only three years, it was long enough for him to become beloved by all who knew him or had business dealings with him. You see that Brodie was a Malihini, and for the consolation of our Malihini Territorial Veterinarian, I will say that in those early days, there were John Browns and Tom Quinns, but whether they used the press to bedamn and attack the Government Veterinarian or not I can't say. At any rate, for a time, they did it rather openly, but as I have already said, he survived all of their assaults and won their esteem.

Glanders was the difficulty that the activities of the Government Veterinarian was most particularly directed against; but notwithstanding all of the careful inspections and frequent killings, new outbreaks continued to appear, and I may say that to eradicate it completely took just about forty years, and I think it is safe to say that at the present time a complete extermination has been accomplished. The Kohala district on Hawaii has been the last stronghold of this enemy, and I have not come across any cases there or elsewhere, since May, 1922, so it seems that the honor of completing the work, started forty years ago by Dr. Brodie, falls on my own shoulders.

Quarantine System Inaugurated

The only safeguard in preventing the introduction of diseased animals in those days was the inspection of live stock aboard ship, and you know how inadequate that would be. It was only after annexation of the Islands, when federal aid was obtained, and a system of inspection at the port of embarkation, that real progress was made. When mallein was discovered and its use made compulsory, a genuine stride forward developed, and to its use more than to any other agent the final extermination of glanders is due. Many other diseases were prevalent at that time, but owing to the fact that they were not directly contagious, or communicable to humans, less attention was given them. I may

mention that glanders had taken its toll of humans, as two persons at least were known to have died, showing pronounced symptoms of this disease.

Liver fluke was very prevalent in nearly all the valleys where fresh standing water was to be found, and caused serious loss to beef and dairy herds. The invasion of this parasite into the human system was brought to my notice on three separate occasions. There is nothing further to say regarding the diseases of animals, as I believe that everything we had in the early days we still have, with the exception of glanders. When hog cholera and hemorrhagic septicemia were first introduced I am not prepared to say, but a diagnosis of these troubles was first made during Dr. Norgaard's time; I do think, however, that they were more or less prevalent from a much earlier period. During my long residence here I have experienced a few cases that are somewhat out of the ordinary, some of which were serious, others comical, and still others that were very embarrassing.

A Long Distance Diagnosis

I will not take up the time of this meeting by reciting many of them—only two. The first I call, "Long Distance Diagnosis." Shortly after we had cable communication with the outside world I received a message from the cable station at Midway Island saying their cow was sick, would not eat, and had a swelling under her jaw. Now I could not do much on that information, so I cabled for a complete history of the case; temperature, pulse, respiration, evacuations and general attitude of the animal. I very soon had all of this information, and after a series of deductions, eliminations, and a few guesses, I arrived at what I thought the trouble must be so I sent a reply about as follows: "I do not recommend treatment, believe your cow will die; make a postmortem and examine thoracic cavity for a nail, piece of wire or foreign body." In a few days I got a message saying the cow had died, a postmortem been made, and a screw, two and one-half inches long, had been found in the left lung, near the heart. Of course, I swelled up. It does a fellow good you know to make a correct hit on a case of that sort, even if it was done on a guess.

My next case will be termed, "The Embarassing One." At least it was to me; to you it may seem comical. One morning, on Richard Street, an elderly woman and a youngish girl stepped into my office. The woman addressed me saying, "You are Dr.

Wood." I replied, "No, I'm not. Dr. Wood is in the next block. I will show you his sign." But she said, "No, I like you, you will do." And, turning to the girl, she said, "Marie, show the doctor your breast." Well, Marie was too obedient, and before I could induce the old lady out to the street the young girl had unbosomed. Maybe you don't think that embarassing; to me at any rate, being at the time young, shy, and unsophisticated, it was very confusing. At that time I would blush if I heard billiard balls kiss.

Gentlemen, it is now almost forty years since I have had the pleasure and benefit of attending a veterinary medical association meeting. The last time was in Montreal, when I read a paper on pneumonia, and nearly won a prize. I came second, the reason for not coming third, fourth, or fifth, was that there were only two papers read. It is wonderful what knowledge a young embryo veterinarian can acquire. I certainly have not known so much since about pneumonia as I did on the night that I competed for that prize.

I hope in the future to be repaid for what I have missed in the past by having the opportunity to meet all of you fellows at frequent meetings of this Association, wherever they may be held, and I trust the next place selected will be Hilo, the Crescent City of the territory.

WISE OFFICIALDOM

Do rattlesnakes have the hoof-and-mouth disease? Who knows? Certainly they cannot be afflicted with the epizootic in the sense that some animals have it, for whoever saw feet on a rattlesnake? As for their mouths, well nobody is going to investigate.

Just the same, wise officialdom is taking no chances. In drafting the quarantine order against the infected area in Texas, the regulations were made to include all creatures that creep or walk—and that includes rattlesnakes.

Texas snake-farm owners are protesting that the order makes it impossible for them to fill orders for snakes. They maintain that their rattlers are 99 44-100 per cent chemically pure and that they can give a bill of health with each snake. Probably they can, but nobody's interested in verifying it. Some of our officials aren't such boobs after all.—

Springfield (Mo.) Leader.

THE OCCURRENCE OF A DISEASE OF CHICKENS IN NEW YORK STATE, CAUSED BY A FILTRABLE VIRUS

By E. L. BRUNETT

Department of Pathology and Bacteriology, New York State Veterinary College, Ithaca, N. Y.

Two dead White Leghorn hens were received at the laboratory of the New York State Veterinary College at Cornell University, October 29, 1924. The letter concerning the specimens gave little information except that the fowls were dying rapidly and a large number had been lost.

Autopsy of the fowls revealed a septicemic disease. Direct bacteriological examination of the internal organs did not reveal any bacteria.

A saline suspension of a portion of the liver ground with sand, when injected in small doses either intravenously or subcutaneously, produced death in normal chickens in two days. Bacteriological examination of the internal organs revealed on bacteria in any of the fowls artificially infected.

A portion of the liver from chickens which died of the disease was ground with sand and suspended in saline solution. This was passed through a Mandler-Berkfeld filter. The filtrate produced death in two days. The filter had been tested previously by ascertaining its ability to retain *Pasteurella aviseptica* in a saline suspension. Subsequently a second filtration was done with similar results. The virus has been carried through nine generations resulting in a slight increase of its virulence. Symptoms of the disease and death have been produced in chickens by feeding small amounts of chopped liver. Very minute quantities of blood of chickens dying of the disease produced death in two days, when injected intravenously.

A visit was made to the farm from which the original fowls came. The disease had practically disappeared. The mortality record obtained from the owner gives a very good idea of the progress of the disease in the flock.

The evdence so far suggests that this disease is similar, if not identical, to the European fowl plague. The ravages of this disease among the flocks of Europe give an important aspect to

Received for publication, November 22, 1924.

MORTALITY RECORD

Month	October												
Day	1 to 15	15	16	17	18	19	20	21	22	23	24	25	
Daily loss	1	1	1	2	11	3	10	15	14	37	50	62	

Month	October						November					
Day	26	27	28	29	30	31— 1	2	3	4	5	6	
Daily loss	96	70	46	58	48	54	40	4	4	0	0	

Size of flock, October 15 651
Size of flock, November 6 24

Total lost in 21 days 627

the recently diagnosed disease in New York State. Further work is being undertaken to determine its relationship to fowl plague.

This preliminary announcement is intended as a warning to the practitioners and laboratory workers of the presence of a filtrable virus disease of chickens in this country which simulates fowl plague.

Three outbreaks of this disease have been recorded. In two of the outbreaks, a common source is suspected. No intercommunication between any of the outbreaks has been established. They are all located, however, in one section of the state.

In one of the outbreaks the owner lost 250 chickens in one week. Inquiry revealed that the owner, a hotel keeper, had purchased some chickens that were sick from a butcher for immediate use. The offal was placed within reach of the owner's flock. The disease appeared with detrimental results. Upon further inquiry it was learned that the butcher had previously lost $800 worth of chickens from some mysterious disease.

Both the disease and its origin are being investigated and it is hoped that interesting data can be obtained.

REVERSE TREATMENT INDICATED

Golfer: "Doctor, you remember you recommended golf to take my mind off my work."

Doctor: "Yes."

Golfer: "Well, can you prescribe something now to get it back again?"

SOME VETERINARY REMINISCENCES

VI. A Tenderfoot in Connecticut

By N. S. MAYO, *Chicago, Ill.*

The Editor, like Oliver Twist, calls for "more." I do not know whether this call is in response to an insistent demand from his readers or whether he wants some "filling" for the JOURNAL.

In a pervious article, mention was made of the fact that I was "fired" from the Kansas State Agricultural College, in 1897, by the Populists, because I "did not agree with them on fundamental principles." I was offered and accepted a position in the Connecticut Agricultural College at Storrs.

It was a new and interesting experience, for one born and raised in the Central West, to go from the broad, sweeping prairies of Kansas, where sunflowers and Populists were blooming, to a college among the hills of Connecticut, where cultivated fields the size of western garden patches were surrounded by stone walls, six feet wide, and where oxen were an important factor in farming. The difference in the people was no less marked. The frank breeziness of the West was replaced by the reticent conservatism of New England.

Storrs College, as it was called, was eight miles from Willimantic. The community consisted of the college, a white church, a country store and a blacksmith shop. I inquired for the post office and was told that an elderly spinster, Miss X, kept the post office in her house down on the "pike." I went to the side door, where there was a slit to poke letters through, opened the door and walked into the lady's kitchen. I do not know who was the more surprised, but I managed to stammer out, "Beg your pardon, Miss X, is it customary to ring the door bell when one comes to the post office?" The old lady looked at me over the top of her specs and replied icily, "The best class of people do." When I recovered my equilibrium I explained that I was a "tenderfoot" there and had not had an opportunity to join the "400" and that out west where I came from it was not customary to ring the door bell on the post office. The old lady, however, was a good old soul and became a loyal friend.

My predecessor at the Connecticut Agricultural College, an excellent man, had been engaged in an acrimonious warfare of words with a non-graduate veterinarian who was located in

Willimantic. This non-graduate was quite an artist at "getting by" with things. He practiced, or said he did, homeopathic veterinary medicine and kept the horse owner up all night putting three drops of supposed medicine on the horse's tongue every fifteen minutes. He surely kept the owner busily interested in the case.

Controversies such as mentioned above are beneath the dignity of professional men and do no one any good except to afford some interest and amusement to "innocent bystanders" who usually encourage the "scrap."

At the first opportunity I called on Doc Y, who appeared flattered with this little attention. After a pleasant visit he began rubbing his right arm and complaining that he had the rheumatism in this arm so bad that "he just couldn't hold a knife" and he wanted to know if I would spay a bitch that a client of his had brought in. I was glad to perform the operation for him, but I took particular pains not to enlighten him on the technic of the operation, as I knew he could not do the operation if necessary to save his soul from perdition. When I left his office he told me that he liked my way of operating, that he had a good many such operations to do and he would like to arrange with me to operate on them on a "fifty-fifty" basis. This I refused and explained it was against professional ethics. The result was that I did all the spaying of bitches in that region and always got paid for it, as a certificate from the veterinarian was necessary in order to get a reduction of the state dog tax.

My college work was not heavy and I did a good deal of outside practice. I had a livery barn for the college and Mr. (now Dr.) Fred Bushnell was barn foreman for a year until he entered the veterinary college at Cornell. Then Mr. (now Dr.) Cassius Way took the place. One day a farmer called me on the phone to come and "see a horse with a sore." The horse had a fistula of the withers, with necrosed dorsal spinous process. As I did not have the necessary equipment to operate, I arranged with the owner to bring the horse to the college for the operation, which he agreed to do. Later he changed his mind and telephoned me that he had decided to kill the horse as he was tired of having it around. I asked him what he would take for the horse and he said, "Five dollars and your bill, and I'll throw in the halter." I accepted the offer and told Cassius Way I would give him a half interest in the horse. He was to dress and care for the case and when the horse was all right I would either buy or sell my share.

In a couple of weeks the horse had recovered and Cassius Way bought my interest in "Bush," the horse named after Dr. Fred Bushnell. It may be news to most readers that Dr. Cassius Way and the writer were partners at one time.

PLAN TO STUDY FOOT-AND-MOUTH DISEASE ABROAD

Plans of the United States Department of Agriculture to safeguard the live stock industry from possible outbreaks of foot-and-mouth disease in the future include research work abroad. The experience of foreign investigators points to the extreme difficulty of preventing the escape of the virus of the disease. For that reason the Department does not consider it safe to permit experimentation in this country. The plan provides for the selection of a foreign country, where the disease is constantly present, preferably one where work could be conducted in close cooperation with foreign investigators engaged in similar research work.

The outline of the method, as proposed by the Bureau of Animal Industry to Secretary of Agriculture Howard M. Gore, provides for the appointment of a committee of three of the best qualified scientists, one of whom would be from the Bureau. The work of the committee as proposed would be to make an exhaustive study of scientific investigations thus far conducted and to collaborate with foreign scientists in continued research.

In making his recommendation, Dr. John R. Mohler, Chief of the Bureau of Animal Industry, states: "The five outbreaks that the United States has experienced during the last 40 years have been suppressed promptly by the slaughter method. With our present knowledge of foot-and-mouth disease this method is the most effective and economical for this country. However, we are very anxious to find, if possible, a better and more scientific method of combating the disease."

The present recommendations of the Bureau of Animal Industry, which have been approved by Secretary Gore, point out that it will be necessary to proceed upon the assumption that work of this kind may require months, and possibly years, to produce the results expected. The plan would result, at least, in enlarging the scientific knowledge of the disease and appears to be the most feasible way of conducting research without en-endangering the live stock of the United States.

CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

NIGHTSHADE POISONING IN CHICKENS AND DUCKS

By ALBERT A. HANSEN, *Lafayette, Ind.*

Purdue University, Agricultural Experiment Station

The death of nine ducks and six chickens on the farm of Mrs. Sam Bell, Cypress, Indiana, during October, 1924, was attributed to poisoning by black nightshade, *Solanum nigrum*, L., a common weed of yards and waste places.

Mature specimen of black nightshade, *Solanum nigrum* L.
The green berries are poisonous.

Evidence of poisoning was noted during the period when the berries were green. The symptoms were described as follows, by County Agent P. O. Wilson, of Vanderburg County: "The chickens simply became paralyzed, and lay stretched out on the ground. They have absolutely no use of the muscles, and die a short time after the poisoning starts to take effect."

An examination of the poultry yard revealed the presence of large quantities of black nightshade. After the plant was eradicated from the yard, no further trouble was experienced.

Black nightshade has long been regarded as a poisonous plant, although there is evidence that the toxicity varies according to the soil and climate. It is believed by some that musky-odored plants are most poisonous. The toxic alkaloidal glucoside *solanin* is present in the stem and green berries, although the mature fruits are apparently harmless and have been used in the making of pies and tarts. Cases of nightshade poisoning in sheep have been noted by the writer in Indiana, while poisoning due to this species has been recorded by other authors in calves, goats, and pigs. The only record of poisoning in poultry that could be found, after a diligent search of the literature on the subject, is the report of Lehmann, Schraber, and Haller, to the effect that the berries of black nightshade are poisonous to ducks and chickens.

That nightshade berries vary in toxicity is indicated by a single feeding experiment conducted by the Veterinary Department of Purdue University. A 1400-gram White Leghorn hen was fed 15 grams of green nightshade berries without any apparent effect. On the following day, the bird was fed another 15 grams without noticeable results.

TRYPARSAMIDE

The following announcement is made by the Rockefeller Institute for Medical Research:

The Rockefeller Institute for Medical Research takes pleasure in informing you that arrangements are being made for the release of Tryparsamide to become effective about January 1, 1925.

The drug is to be manufactured by the Powers-Weightman-Rosengarten Co., of Philadelphia, and will be distributed through the regular trade channels. Orders for future delivery may be placed with drug firms or forwarded to the manufacturers, in which case delivery may be made, at the discretion of the manufacturers, through their nearest representative. The scale of prices, which has been arranged in conference with representatives of the Rockefeller Institute, should be the same in either case. As the drug is being released for the benefit of the public and the Rockefeller Insittute does not share in any way in the profits, the prices are being made, with the cordial cooperation of the manufacturers, as low as at present possible.

Blackleg recently made its appearance among beef cattle, in Vinton County, Ohio.

The constitutionality of the Kosher law of New York, regulating the sale of Kosher meat in that state, has been attacked before the Supreme Court.

REVIEWS

PARASITES OF SWINE. Maurice C. Hall, Ph. D., D. V. M., Zoologist, Bureau of Animal Industry, U. S. Department of Agriculture. 160 pages and 129 figures in the text. L. A. Merillat, Chicago, Ill., 1924.

Doctor Hall discusses all the known verminous parasites of swine, including 63 species, eighteen of which are trematodes, nine are cestodes, thirty-five are nematodes, and one is an acanthocephalid. Two species of linguatulids, parasitic in swine, are also discussed. Practically all known important facts concerning parasites of swine are included in this treatise, each species being thoroughly described zoologically and examined from the viewpoint of its medical importance.

In all cases Doctor Hall has used the accepted zoological names which, in certain cases, are not the names by which the parasites are generally known to veterinarians and physicians. The complete synonomy that is included for each parasite will obviate confusion concerning the identity of the species in question. Hosts other than swine, in which the parasites under consideration are known to occur, are given and the number of worms for which man is given as a host will prove surprisingly large to most readers, thus emphasizing the general medical importance of swine parasites, many of which are transmissible to human beings.

Following the name and the synonomy of each parasite, there follow, in order, its location in the host, an adequate morphological description, an account of its life history wherever the essential facts are known, its distribution, its pathological effects, medicinal treatment indicated, and prophylactic measures to be adopted for control and eradication.

The illustrations are abundant and excellent, consisting of 129 text figures, all of which are reproductions copied in most instances from original sources of information.

Doctor Hall's latest book is a contribution to veterinary medicine as well as to parasitology and will doubtless arouse renewed interest in the study of the parasites of swine.

B. S.

THE INNER SECRETIONS OF THE SEX GLANDS. Alex. Lipschütz, M.D. Preface by F. H. A. Marshall, F.R.S. 513 pages, with 140 text illustrations. (America) Williams and Williams Co., Baltimore. (England) W. Heffer and Sons, Ltd., Cambridge, 21 shillings.

This is a revised edition in English of a book first published in German, in Bern, in 1919, under the title "Die Pupertätsdrüse und ihre Wirkung." It deals with the causes of the distinction between the sexes and the factors which are responsible for the developmental processes associated with sexual maturity. An account is given of the recent work of Steinach and others on the reversibility of the sexes, the part played by that portion of the testicle or ovary called the interstitial gland, and the effects of grafting to produce rejuvenation.

Among the titles of sections of particular interest to veterinarians are results of castration in mammals and birds, the condition of the testicle and ovary in partial castration, the effects of feeding sexual gland, the ingrafting of testicle and ovaries in mammals, the functional relationship between the corpus luteum and the interstitial gland, the internal secretion of the corpus luteum, extracts of the whole sex gland, extracts of different parts of the sex gland, the secretion of the genital passages in relation to the vitality of the spermatozoa, and the case of the freemartin.

In the last chapter are ten pages devoted to practical aspects, including a short description of the operations by Kolb, Wilhelm, Sand, and others in the transplantation of ovaries and testicles in domesticated animals.

C. M. H.

SURGICAL DISEASES OF THE DOG AND CAT. Frederick T. G. Hobday, C. M. G., F. R. C. V. S., F. R. S. E. Hon. Veterinary Surgeon to His Majesty the King, etc. Third edition, revised and enlarged. xii + 435 pages, with 263 figures in the text. Chicago Medical Book Co., Chicago, Ill., 1924. Price, cloth, $4.50.

The appearance of the third edition of this valuable work is very timely. Small animal practice is rapidly assuming the place once filled by equine practice in the cities. Veterinarians by the scores now confine themselves exclusively to dog and cat work. These men will welcome this latest literary effort of Professor Hobday.

The volume is divided into chapters dealing with the various regions and organs of the body. Chapters on anesthetics and obstetrics have been added. General considerations are dealt with in chapters on pre- and post-operative care of patients, sterilization of instruments, drainage tubes, suture material, methods of restraint, etc.

Many references in the text are given to articles which have appeared in the British veterinary journals, some as far back as 1897. While such references have their value, this should not be over-estimated. Then, too, in view of the fact that an American edition of this work has been prepared, it would seem in order that references to some of the excellent articles that have appeared in American veterinary journals should have been included. American practitioners are much more likely to have these articles to refer to than the majority of those cited.

The book is printed in type that is very pleasant to read, and on good paper. The illustrations in most cases are well reproduced, although quite a number are of doubtful didactic value, which, after all, is the chief function of illustrations in a text of this kind.

ABSTRACTS

BEITRAG ZUR KENNTNIS DES INFEKTIOSEN ABORTUS BEIM RIND. (Contributions to the Knowledge of Infectious Abortion in Cattle.) Hans Ludwig. Schweizer Achiv. fur Tierheilkunde, lxvi (1924), pp. 519-606.

Personal observations and reviews of the literature concerning abortion, metritis, and so-called granular venereal disease are given from the standpoint of the veterinary practitioner. Living abortion vaccine was used on 203 animals. Details are given for a stable of 38 cows and 8 large heifers. For ten years, this herd had been free from cases of abortion and sterility, although granular venereal disease was known to have been present. During the season of 1923, most of the cows failed to conceive, and showed purulent vaginal discharges. Samples of blood from several cows and the bull were all positive to the agglutination test with *B. abortus* (Bang). This organism was also cultured from an aborted fetus.

On June 11, 1923, the cows and heifers were injected subcutaneously with living *B. abortus* cultures which had been recently isolated from an animal in this particular herd. Each

cow received the entire surface growth from two luxuriant agar slants, suspended in 10 cc of physiological salt solution. Temperature reactions occurred in all the animals, and for six days the average milking was reduced about one liter. In some cows, the reduction was 50 per cent, in others, nothing at all. On the eighth day, all were again normal, except for swellings at the point of inoculation, which persisted for 3 to 5 weeks. Twelve cows developed abscesses.

On June 30, 1923, the animals were given another injection, but the reactions were not so marked. The operator accidentally wounded his finger with the needle. The following day, he developed a slight chill and fever and three weeks later a small abscess.

Although the cows were given no local treatment, all of the vaginal discharges promptly stopped, and the owner was very favorably impressed. Four cows, which were pregnant at the time of vaccination, aborted between the fifth and eighth month, and one cow calved a little too early. On Jan. 1, 1924, thirteen cows and ten heifers had become normally pregnant.

In another herd, thirty-five cows and heifers were vaccinated with living cultures. The bull in this herd received three 30-gram doses of killed culture, and later ten grams of living vaccine. Most of the females in the herd became normally pregnant from this bull, and to the end of June, 1924, no abortions had occurred.

However, seven outside cows from non-infected and non-immune herds were also bred to this bull, and five of these subsequently aborted. It is believed that they became infected from the bull, but it was not determined whether the infection was carried by him in a purely mechanical way or whether he was a continuous secreter of the germs.

Summary. 1. The infectious abortion (Bang) is very widespread in certain parts of Switzerland.

2. For a certain diagnosis, a bacteriological or serological analysis is indispensable.

3. The so-called granular venereal disease has no relation to abortion disease. The sequelae (pyometra, endometra, abortion, etc.) are alone the results of infection with *B. abortus* (Bang).

4. The immunization with living cultures in infected herds was successful. The use of dead cultures, even on pregnant animals, is of no value.

5. After the injection of living cultures, the animals as a rule showed a brief fever and reduction in milk. Disturbance of the

appetite is seldom seen. Occasional swellings and abscesses from the injection are of no significance. They may be prevented by careful trituration and the finely divided condition of the vaccine.

6. The reaction following the use of living cultures is not so great that their use should be dispensed with.

7. The transfer of the abortion bacillus appears to be primarily through the bull. In no case was transmission by other means positively established.

8. However, the immunization of the bull gives no guarantee that the abortion infection may not be carried over in a purely mechanical way during copulation.

HARING.

INTOXICATION OF SWINE DUE TO THE EATING OF THE UDDER OF A DEAD COW (Abstractor's title.) Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjottkontrollen, Kristiania, 1921, p. 16.

District Veterinarian J. Julsrud reports: "One morning a cow that had just calved was found dead, apparently hanging in the chain with which she was tied. The cause of her death was evidently milk fever. The cow was skinned and the carcass prepared as feed for chickens and hogs. The udder was divided between six one-year-old pigs. The next day all six pigs lay comatose and did not react to any external stimulus. The pigs remained lying down showing labored respiration with cold and partly cyanotic skin. At this time the writer was called, but on his arrival the pigs were dead. Postmortem showed marked degeneration of the heart, dark blood, some serous exudate and small hemorrhages."

He concludes that this strengthens the idea that milk fever is caused by intoxication from the udder.

H. J. S.

HYDERALANTOIS (HYDROALLANTOIS). Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjöttkontrollen, Kristiania, 1921, p. 15.

District Veterinarian I. H. Heggenhaugen reports the finding of hydroallantois in a cow, her daughter and granddaughter. The gestation period in these animals lasted from 315 to 355 days.

H. J. S.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

Major Wilfred J. Stokes died at Sternberg General Hospital, Philippine Islands, on November 3, 1924. (See page 537.)

Captain Harry E. Van Tuyl was relieved from duty at Fort Ringgold, Texas, effective November 15, 1924 and, on expiration of leave, will sail from San Francisco on Government transport, December 30, 1924, for duty in the Philippine Department.

Captain Mott Ramsey has been assigned to duty at Fort Ringgold, Texas, on completion of his present tour of foreign service in February, 1925.

Major R. C. Musser has been relieved from duty at Chicago Quartermaster Intermediate Depot and will sail from New York City on December 5, 1924, for the Philippine Department for duty.

Major Herbert S. Williams has been relieved from duty at Fort Bliss, Texas, and will report on December 1, 1924, to the Surgeon General for duty as Attending Veterinarian, Washington, D. C., and to the Commanding General, District of Washington, as District Veterinarian.

Veterinary Reserve Corps

Additional Reserve Corps Officers

Major:
Hoyt, David Morris.....227 N. Peterboro Street, Canastota, N. Y.
Captain:
Stotchik, Julius.....Bastrop, Texas.
First Lieutenants:
Glaisyer, Wallace V.....Coquille, Oregon.
Word, Neil Erskine.....870 W. 181st Street, New York, N. Y.
Second Lieutenants:
Clarvoe, Harold McK.....Hendersonville, N. C.
Smotherman, Ervin Claud...309 N. Church St., Hillsboro, Texas.

Changes in Status

PROMOTIONS

Meador, Daniel John, Auburn, Alabama, promoted to Major, Vet-ORC.

McConnell, Wm. Clarence, 623 N. Burgess Street, P. O. Box 88, Holdenville, Oklahoma, promoted to Major, Vet-ORC.

Marcus, Carlton P., C-4 Haverford Apartments, Atlantic City, N. J., promoted to Captain, Vet-ORC.

Marsh, Edward T., Ulrich, Mo., promoted to 1st Lt. Vet-ORC.

Hartke, George B., 802 Findlay Street, Cincinnati, Ohio, promoted to 1st Lieut. Vet-ORC.

Button, Otis G., 2909 S. "M" Street, Tacoma, Washington, promoted to Captain Vet-ORC.

STATE BOARD EXAMINATIONS

Iowa Veterinary Examining Board. State House, Des Moines, Iowa. Jan. 19-20, 1925. Dr. P. Malcolm, Secretary, State House, Des Moines, Iowa.

Arkansas Veterinary Examining Board. Old State House, Little Rock, Ark. Jan. 20, 1925. Dr. Joe H. Bux, Secretary, Little Rock, Ark.

AMERICAN VETERINARY MEDICAL ASSOCIATION

Minutes of Meeting of Executive Board, Chicago, Ill., Dec. 4, 1924

A meeting of the Executive Board was held at the La Salle Hotel, Chicago, Ill., Thursday, December 4, 1924, at 7:30 p. m.

Present: Drs. David S. White, Charles E. Cotton and B. W. Conrad, members of the Board; Dr. J. A. Kiernan, representing District No. 4, in the absence of Dr. John R. Mohler; Dr. W. W. Dimock, Lexington, Ky., representing Dr. Cassius Way, member-at-large; President Merillat, Secretary-Editor Hoskins and Dr. E. R. Steel, of Grundy Center, Iowa, Chairman of the Section on General Practice. (Districts 1 and 2 were not represented.)

Dr. C. E. Cotton was chosen to act as chairman of the meeting.

The first item of business was the selection of the dates for the 1925 meeting. The Secretary read a communication from Dr. B. T. Simms, of Corvallis, Oregon, Chairman of the Local Committee on Arrangements, suggesting that the meeting be held during the week of July 20, 1925, and giving reasons therefor. After considerable discussion Dr. White moved that the meeting be held in Portland, Oregon, during the week of July 20, 1925. Motion duly seconded and carried. After further discussion, Dr. Conrad moved that the duration of the meeting be four days and that the dates of the meeting be July 21-22-23-24. Duly seconded and carried.

The advisability of creating a section on small animal practice was then discussed. The Secretary called attention to the fact that the By-laws vested the Executive Board with the power to create additional sections if deemed expedient. (See By-laws, Article 12, Section 1.) The relation of the proposed section to the Section on General Practice was thoroughly discussed, as well as the possible effects on future programs. It seemed to be the consensus of opinion of those present that the small animal practitioners should be given an opportunity to demonstrate the need for and the popularity of a section on small animal practice, and it was moved by Dr. Conrad that such a section be created. Duly seconded and carried.

The Secretary then asked that the question of an official route to Portland be discussed. He stated that representatives of practically all of the transcontinental railroads had submitted

propositions. It seemed advisable to select the route that would enable the largest number going to the meeting to travel as a party. Excursion rates would be in effect from practically every point in the United States and such rates provided for optional routes returning. This would allow any one to return from Portland over any route that he might wish, irrespective of the route selected in going to Portland. Drs. C. E. Cotton and C. P. Fitch had extended invitations for veterinarians going to Portland to stop off at the Twin Cities, en route, and visit the University of Minnesota. After further discussion it was moved by Dr. White that the Great Northern be designated as the official route, duly seconded and carried.

The Secretary proposed that a new membership directory be published early in 1925 and that there be incorporated with it the Constitution and By-laws of the Association, with all revisions to date. After a very thorough discussion a motion prevailed to publish a directory, same to be issued as soon as possible after the first of the year.

The next item of business was the consideration of charges against five members of the Association for alleged violations of the code of ethics. Each case was taken up separately and the Secretary was given instructions as to how to proceed in each case.

The Secretary read a communication from Dr. Cassius Way, in which the writer called to the attention of the Executive Board the activities of the Graham Scientific Breeding School, of Kansas City, Mo. It seemed to be the consensus of opinion of the members of the Board that the Association was not in any position to take action against this organization. No action taken.

The Secretary presented two cases as examples of the trend of activities upon the part of private practitioners in the matter of advertising. In both of these cases the veterinarians in question appear to be advertising themselves individually under the guise of giving publicity to the profession as a whole. The question was very thoroughly discussed but no definite action taken.

The Secretary read excerpts from the recently issued Farmers' Bulletin of the United States Department of Agriculture entitled, "Udder Disease of Dairy Cows." Formal complaint to the Association had been made against this bulletin, and it appeared to be the opinion of those present that the publication of this bulletin was not only very unfortunate but absolutely uncalled for, and that it could serve no useful purpose. Dr. Kiernan,

while not defending the bulletin, promised to bring the matter to the attention of Dr. Mohler, Chief of the Bureau. No further action taken.

Meeting adjourned at 1:00 a. m.

H. PRESTON HOSKINS, *Secretary.*

ORGANIZATION OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION 1924-1925

OFFICERS

L. A. Merillat, President, 1827 So. Wabash Ave., Chicago, Ill.
C. D. McGilvray, 1st Vice-Pres., Ontario Vet. College, Guelph, Ont., Can.
J. N. Gould, 2nd Vice-Pres., Box 211, Worthington, Minn.
Lt. Col. Ray J. Stanclift, 3rd Vice-Pres., Vet. Corps, Fort Sam Houston, Tex.
J. H. McNeil, 4th Vice-Pres., State House, Trenton, N. J.
I. E. Newsom, 5th Vice-Pres., Agri. College, Fort Collins, Colo.
H. Preston Hoskins, Secretary-Editor, 735 Book Bldg., Detroit, Mich.
M. Jacob, Treasurer, 312 W. Church Ave., Knoxville, Tenn.

EXECUTIVE BOARD

Cassius Way, Member-at-Large, (Chairman) 30 East 42nd St., New York, N.Y.
Geo. Hilton, 1st District, 126 Lewis St., Ottawa, Ont., Can.
T. E. Munce, 2nd District, Dept. of Agri., Harrisburg, Pa.
D. S. White, 3rd District, Ohio State University, Columbus, Ohio.
John R. Mohler, 4th District, Bureau of Animal Industry, Washington, D. C.
C. E. Cotton, 5th District, Old Capitol, St. Paul, Minn.
B. W. Conrad, 6th District, Sabetha, Kans.

SECTION ON GENERAL PRACTICE

E. R. Steel, Chairman, Grundy Center, Iowa.
L. A. Wright, Secretary, Columbus, Wis.

SECTION ON EDUCATION AND RESEARCH

F. M. Hayes, Chairman, University Farm, Davis, Cal.
E. M. Pickens, Secretary, Univ. of Maryland, College Park, Md.

SECTION ON SANITARY SCIENCE AND POLICE

Orlan Hall, Chairman, 92 Fourth St., Ottawa, Ont., Can.
J. H. McNeil, Secretary, State House, Trenton, N. J.

COMMITTEE ON INTELLIGENCE AND EDUCATION

L. W. Goss, Chairman, Ohio State University, Columbus, Ohio.
B. T. Simms, Oregon Agricultural College, Corvallis, Ore.
J. Fleming, 23 Federal Bldg., Kansas City, Kans.
T. H. Ferguson, 421 Broad St., Lake Geneva, Wis.
D. H. Udall, 106 Brandon Place, Ithaca, N. Y.

COMMITTEE ON LEGISLATION

J. G. Ferneyhough, Chairman, Box 656, Richmond, Va.
J. H. McNeil, State House, Trenton, N. J.
J. S. Koen, Bloomington, Ill.
C. J. Marshall, 5031 Pine St., Philadelphia, Pa.
W. H. Welch, Lexington, Ill.

BUDGET COMMITTEE (EX-OFFICIO)

L. A. Merillat, 1827 So. Wabash Ave., Chicago, Ill.
M. Jacob, 312 W. Church Ave., Knoxville, Tenn.
H. Preston Hoskins, 735 Book Bldg., Detroit, Mich.
Cassius Way, 30 East 42nd St., New York, N. Y.

COMMITTEE ON RESOLUTIONS

John R. Mohler, Chairman, Bureau of Animal Industry, Washington, D. C.
R. R. Dykstra, 607 Houston Ave., Manhattan, Kans.
J. L. Tyler, 120 E. Belgrave Ave., Huntington Park, Cal.
E. E. Wegner, College Station, Pullman, Wash.
G. E. Jorgenson, Clermont, Iowa.
Wm. M. Bell, 609 Broadway, Nashville, Tenn.

COMMITTEE ON NECROLOGY

H. Preston Hoskins, Chairman, 735 Book Bldg., Detroit, Mich.
R. C. Griffith, Box 47B, Fort Worth, Texas.
Otto Faust, 209 Union St., Poughkeepsie, N. Y.
Benj. D. Pierce, 47 High St., Springfield, Mass.
J. I. Handley, P. O. Box 1533, Atlanta, Ga.

COMMITTEE ON HISTORY

A. H. Baker, Chairman, 5651 S. Peoria St., Chicago, Ill.
John W. Adams, 39th St. & Woodland Ave., Philadelphia, Pa.
Lt. Col. J. A. McKinnon, Surgeon General's Office, Washington, D. C.
C. D. McGilvray, Ontario Veterinary College, Guelph, Ont., Can.
O. V. Brumley, Ohio State University, Columbus Ohio.
R. C. Moore, 3410 Mitchell Ave., St. Joseph, Mo.

INTERNATIONAL COMMITTEE ON BOVINE TUBERCULOSIS

J. A. Kiernan, Chairman, B. A. I., Washington, D. C.
V. A. Moore, N. Y. State Veterinary College, Ithaca, N. Y.
E. A. Watson, Biological Laboratory, Ottawa, Ont., Can.
M. H. Reynolds, University Farm, St. Paul, Minn.
J. G. Ferneyhough, Box 656, Richmond, Va.

COMMITTEE ON ABORTION

A. Eichhorn, Chairman, Lederle Antitoxin Laboratories, Pearl River, N. Y.
C. P. Fitch, University Farm, St. Paul, Minn.
E. C. Schroeder, B. A. I. Exp. Station, Bethesda, Md.
Herbert Lothe, 211 South St., Waukesha, Wis.
Harry W. Caldwell, 324 S. Hale St., Wheaton, Ill.
J. F. DeVine, Goshen, N. Y.

COMMITTEE ON PREVENTION OF TRANSMISSIBLE DISEASES OF ANIMALS

G. H. Hart, Chairman, University of California, Berkeley, Cal.
J. I. Gibson, Live Stock Exchange Bldg., So. St. Joseph, Mo.
R. D. Wall, 910—28th St., Des Moines, Iowa.
R. C. Julien, State House, Indianapolis, Ind.
I. B. Boughton, University of Illinois, Urbana, Ill.

REPRESENTATIVE TO AMERICAN RESEARCH COUNCIL

Ward Giltner, Box 955, East Lansing, Mich.

A. V. M. A. REPRESENTATIVE ON BOARD OF MANAGERS, HORSE ASS'N OF AMERICA

T. A. Sigler, Greencastle, Ind.

COMMITTEE ON POLICY

E. A. Cahill, Chairman, c/o Pitman-Moore Co., Zionsville, Ind.
*L. A. Merillat, 1827 So. Wabash Ave., Chicago, Ill.
*M. Jacob, 312 W. Church Ave., Knoxville, Tenn.
*H. Preston Hoskins, 735 Book Bldg., Detroit, Mich.
*Cassius Way, 30 East 42nd St., New York, N. Y.
*Ex-officio.

COMMITTEE ON VETERINARY BIOLOGICS

Ashe Lockhart, Chairman, 400 New Center Bldg., Kansas City, Mo.
E. L. Quitman, 1514 W. Van Buren St., Chicago, Ill.
L. Van Es, University Farm, Lincoln, Nebr.
F. A. Imler, 19 Federal Bldg., Kansas City, Kans.
Wm. H. Lytle, Salem, Ore.

Resident State Secretaries

Alabama	I. S. McAdory, Auburn.
Arizona	J. C. Norton, 201 Fleming Bldg., Phoenix.
Arkansas	H. W. Wilson, 218 Rightor St., Helena.
California	J. L. Tyler, 120 E. Belgrave Ave., Huntington Park.
Colorado	A. N. Carroll, 301 W. Third St., Pueblo.
Connecticut	G. E. Corwin, 177 Sisson Ave., Hartford.
Delaware	C. C. Palmer, Univ. of Delaware, Newark.
Dist. of Columbia	T. P. White, B. A. I., Washington.
Florida	A. L. Shealy, Univ. of Florida, Gainesville.
Georgia	A. G. G. Richardson, 1234 So. Lumpkin St., Athens.
Idaho	J. D. Adams, 909 No. 15th St., Boise.
Illinois	H. B. Raffensperger, 6837 S. Marshfield Ave., Chicago.
Indiana	R. C. Julien, 134-135 State House, Indianapolis.
Iowa	W. F. Guard, Iowa State College, Ames.
Kansas	E. J. Frick, Vet. Div., K. S. A. C., Manhattan.
Kentucky	C. A. Miller, 409 So. Jackson St., Louisville.
Louisiana	Harry Morris, Experiment Station, Baton Rouge.
Maine	J. B. Reidy, State Capitol, Augusta.
Maryland	R. V. Smith, 17 Court St., Frederick.
Massachusetts	H. W. Jakeman, 44 Bromfield St., Boston.
Michigan	B. J. Killham, State Office Bldg., Lansing.
Minnesota	H. C. H. Kernkamp, 2176 Scudder Ave., St. Paul.
Mississippi	W. P. Ferguson, 316 Second St., Grenada.
Missouri	G. G. Graham, 812 W. 59th St. Terrace, Kansas City.
Montana	A. D. Knowles, 302 So. 4th St., Missoula.
Nebraska	Floyd Perrin, Box 311, Lincoln.
Nevada	Edward Records, University of Nevada, Reno.
New Hampshire	F. F. Russell, 16 Thorndike St., Concord.
New Jersey	E. W. Smillie, Rockefeller Inst., Princeton.
New Mexico	F. H. Barr, 211 E. Gold Ave., Albuquerque.
New York	W. H. Kelly, 233 Western Ave., Albany.
North Carolina	J. P. Spoon, 317 Worth St., Burlington.
North Dakota	J. B. Hollenbeck, Bismarck.
Ohio	Reuben Hilty, 619 Walnut St., Toledo.
Oklahoma	F. F. Meads, Cherokee.
Oregon	Thos. B. Carter, 415 E. 7th St., Portland.
Pennsylvania	R. M. Staley, P. O. Box 1404, Philadelphia.
Rhode Island	T. E. Robinson, 92 High St., Westerly.
South Carolina	M. R. Blackstock, 151 Hampton Ave., Spartanburg.
South Dakota	C. C. Lipp, Brookings.
Tennessee	Willis B. Lincoln, 2102 West End Ave., Nashville.
Texas	R. P. Marsteller, College Station.
Utah	H. J. Frederick, Logan.
Vermont	L. H. Adams, State House, Montpelier.
Virginia	Thomas Fraser, 2623 Hanover Ave., Richmond.
Washington	Carl Cozier, 311 Lottie St., Bellingham.
West Virginia	S. E. Hershey, Charleston.
Wisconsin	V. S. Larson, State Capitol, Madison.
Wyoming	Cecil Elder, University of Wyoming, Laramie.

Resident Provincial Secretaries

Alberta	J. C. Hargrave, Medicine Hat.
British Columbia	J. G. Jervis, Milner.
Manitoba	Alfred Savage, Manitoba Agri. College, Winnipeg.
New Brunswick	Adam T. McLean, Moncton.
Nova Scotia	J. Steen, Customs Bldg., Halifax.
Ontario	R. A. McIntosh, 84 Forbes Ave., Guelph.
Prince Edw. Isl'd	C. J. Bousfield, 135 Upper Prince St., Charlottetown.
Quebec	J. H. Villeneuve, 20 Dorchester W., Montreal.
Saskatchewan	R. C. Chasmar, Hanley.

Resident Territorial Secretaries

Alaska	B. C. Parker, Afognak, Whale Island.
Canal Zone	Capt. F. W. Shinn, Camp Gaillard.
Hawaii	H. B. Elliott, Box 167, Hilo.
Philippine Isl'ds	Stanton Youngberg, Bur. of Agri., Manila.

ASSOCIATION MEETINGS

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was called to order by the president, Dr. J. Elliott Crawford, in the Academy of Medicine, 17 W. 43rd St., New York City, Oct. 1, 1924, at 8:30 p. m.

The minutes of the June meeting were read and approved.

Owing to illness, Dr. Otto Faust, of Poughkeepsie, N. Y., was unable to be present to present his paper.

Dr. Chas. H. Higgins gave a very interesting talk, and outlined many points which are of importance to the veterinary profession. Among the themes presented was the fact that profit was the aim of the veterinary service, and that this profit was dependent to a large degree upon the kind of service rendered.

Profit may be secured in several forms. There is the financial profit, which is always the end result of the business transaction, and the profit coming from the satisfaction gained from having been instrumental in relieving the suffering of animals which we are called upon to treat. To be successful, it is necessary that the requisite amount of work be undertaken. Many business and professional enterprises fail from the want of the requisite work to make them successful.

The business training of the veterinarian is something that should be given more attention than has heretofore been accorded in the teaching institutions. Too often the young veterinarian is thrust upon the world without the requisite knowledge of business methods and without any idea of the ordinary methods of business procedure. This acts as a handicap, for it does not permit the proper selling of his services. This aspect, if given more attention in the schools, would overcome many of the difficulties of the young veterinarian. It would also foster better relationships between practitioners in the same community.

Dr. Higgins also touched upon the ethics of the profession, citing many circumstances that have transpired in this country. His main theme was that "water will find its own level," and if the veterinarian is ethical in his relationships with his fellow practitioner and fellow man, that it matters little whether he uses a cut showing a horse or dog on his stationery, or prefers to confine himself to his name and professional designation.

Dr. Higgins urged that every veterinarian give more attention to investigations. The veterinarian thinks that possibly much apparatus is required. This is hardly true, for the most effective findings have been accomplished with meager facilities. He concluded by stating that a man is judged as he stands in the community. We should have confidence in each other and be guided by the golden rule.

A discussion on these subjects was entered into by Drs. Shaw, McKim, Gannett, and McKinney.

Dr. W. Reid Blair gave a splendid report of the A. V. M. A. meeting at Des Moines and Ames, Iowa. He reported a very large attendance, but not so many veterinarians from the East present. The location was ideal for so large a gathering, and the facilities for the clinics were perhaps the best seen at any meeting. The ladies were well entertained, and the meeting as a whole was one of the best ever had.

Dr. Ray W. Gannett reported the proceedings of the Eastern States Tuberculosis Conference and the New York State meeting held at Albany. A number of interesting papers were read, but very few discussions followed. The meeting followed the Conference, and was well attended and a number of instructive papers read. There was no clinic held, but it was pronounced a successful meeting.

Dr. Robert S. MacKellar gave a most exhaustive report of the joint association meeting, held at the Lederle Laboratories, Pearl River, N. Y., on Sept. 24th. The literary program was most interesting and instructive. The dinner following seemed to be most satisfying, and surely well received. During the afternoon, the party was conducted through the entire plant, where numerous demonstrations were given in the manufacture and preparation of their products. A goodly number of ladies were present and were well entertained. Dr. MacKellar did not exaggerate when he said the meeting was most instructive and one long to be remembered by all present.

Dr. Roy B. P. Waller, of New York City, and Dr. E. Latourel, of Yonkers, N. Y., were elected to membership.

The treasurer reported the return of check for $50, donated to the New York State Society, with thanks.

A vote of thanks was tendered Drs. Higgins, Blair, Gannett, and MacKellar for their contributions to the meeting.

No further business appearing, the meeting adjourned.

C. G. Rohrer, *Secretary.*

SOUTHEASTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION

The regular quarterly meeting of the Southeastern Michigan Veterinary Medical Association was held, October 15, 1924, at the Department of Health headquarters, Detroit. About thirty members were in attendance.

The minutes of the previous meeting were read and approved. The following veterinarians were admitted to membership: Drs. Joseph J. Donahue, Mt. Clemens; Donald T. Kemp, H. C. Hughes, and A. L. Tow, of Detroit.

The literary program consisted of the following papers: "State-Wide Meat Inspection," by Dr. Max Gordon, of Detroit, and "The Effect of Cod Liver Oil on Dogs Convalescing from Distemper," by Dr. A. S. Schlingman, of Detroit. Both of these papers were very thoroughly discussed. Dr. E. E. Patterson reported his observations on the use of chlorin gas in controlling distemper in his hospital.

It was decided to devote the program of the January meeting to the subject of better meat inspection for the small cities and towns surrounding Detroit.

H. Preston Hoskins, *Secretary.*

INTERNATIONAL ASSOCIATION OF DAIRY AND MILK INSPECTORS

The thirteenth annual convention of the International Association of Dairy and Milk Inspectors was held at Detroit, Michigan, October 17, 18, and 20, 1924. Dr. J. B. Hollingsworth, of Ottawa, Canada, was president of the Association for the year 1923-1924.

A very extensive program was presented, and the following papers are mentioned, either on account of their interest to veterinarians or because the authors of the papers are veterinarians, showing the interest which members of the profession are taking in the work of the Association:

"Ventilation of the Dairy Stable as a Vital Factor in the Production of Milk," by Mr. H. O. Daniels, Deputy State Dairy and Food Commissioner, Hartford, Conn.

"The Effect of the Tuberculin Test of Cattle on the Milk Supply of a City of about 100,000 Population," by Mr. H. E. Bowman, Inspector of Milk, Somerville, Mass.

"Actinomycosis and the Public Health," by Dr. G. H. Grapp, State Dairy Inspector, Baltimore, Md.

"Foot-and-Mouth Disease and Its Relation to the Public Milk Supply," by Dr. Charles C. Wing, City Veterinarian, Oakland, Cal.

"Contrast in the Keeping Quality of Raw Milk Supplies with and without the Application of the Reductase Test," by Dr. H. A. Harding and Dr. Archibald R. Ward, Dairy Research Division of the Frederick C. Mathews Company, Detroit, Mich.

"Some Experiments with Holding Tanks," by Dr. George W. Grim, Milk Control Officer, Lower Merion Board of Health, Ardmore, Pa.

MICHIGAN-OHIO VETERINARY MEDICAL ASSOCIATION

The Michigan-Ohio Veterinary Medical Association met at Monroe, Mich., October 30, 1924. The members were the guests of Dr. A. L. Tiffany and all took dinner with the Monroe Commercial Club, at the Masonic Temple.

Dr. H. M. Newton, of Lansing, gave a very interesting and instructive talk on "Experiences with Foot-and-Mouth Disease in California." Dr. B. J. Killham, State Veterinarian, discussed "Diseases of Sheep." Dr. A. Kotlan, of the Royal Veterinary College of Hungary, now at the Michigan Agricultural College, described veterinary conditions in Hungary in a most entertaining way.

Dr. Ward Giltner outlined plans for the short course for veterinary practitioners to be given at the Michigan Agricultural College, in January. Dr. Giltner also conducted a question box, which proved to be an outstanding feature of the meeting.

W. E. WATSON, *Secretary-Treasurer.*

SOUTHEASTERN STATES VETERINARY MEDICAL ASSOCIATION

The ninth annual meeting of the Southeastern States Veterinary Medical Association was held at Hotel Murphy, Richmond, Virginia, November 10-11, 1924. After the meeting was called to order by the President, Dr. A. L. Hirleman, of Atlanta, Georgia, Hon. Jno. R. Sanders, Attorney General of the State of Virginia, welcomed the convention on behalf of the city of Richmond. In the absence of Dr. M. Jacob, Dr. L. A. Merillat, president of the A. V. M. A., responded to the address of welcome.

Following President Hirleman's address, the meeting was entertained by an address by Dr. L. A. Merillat. During the course of his address, he outlined the general trend of the profession, and also stated there were intrusions being made by the county agent, farm bureaus, the Bureau of Animal Industry's lay inspectors, army officers not veterinarians, and live stock owners.

His address was discussed by members of the Association, and many points of interest were brought out. He especially emphasized that there two kinds of veterinarians: First, "the propserous one who remains in the profession," and secondly, "the non-prosperous one, who is leaving the profession."

Dr. P. C. McLain, of Gastonia, N. C., presented a very practical and useful paper on "The Various Uses of Udder Inflation." The paper was discussed by members of the Association. "The Proper Place for Veterinary Subjects in an Agricultural College Course," was ably discussed by Dr. I. D. Wilson, of Blacksburg, Va. This paper brought out a great deal of discussion.

The afternoon session was opened with a paper by Dr. V. A. Moore, of Cornell University, "Some Problems for the Veterinarian." (His paper will be published in the JOURNAL at an early date.) Following Dr. Moore's paper, Dr. R. M. Blackstock, Spartanburg, S. C., discussed "Heat or Sunstroke," "Rabies," and "Complications Following Influenza" as "Some Cases that Have Puzzled Me."

Dr. J. Howard Brown, Rich Square, N. C., read a paper on "Digestive Thoughts (Physiological and Pathological)."

A delightful banquet was served at Hotel Murphy for the evening session. The Association was honored by the presence of Honorable E. Lee Trinkle, Governor of Virginia. He made a very forceful talk, and complimented the veterinary service which had been rendered in the state of Virginia through the Bureau of Animal Industry, State Veterinary Department, and the practitioners of his state. Several other short talks were made by members of the Association and visitors at the banquet.

The morning session was opened with a paper by Dr. John R. Mohler, Chief of the Bureau of Animal Industry, who gave the convention a report on the outbreaks of foot-and-mouth disease, with particular reference to the outbreaks in California and Texas. He summarized the lessons that had been learned from the Bureau's experience in eradicating the outbreaks. (His paper will be published in the JOURNAL at an early date.)

Dr. Peter F. Bahnsen, State Veterinarian of Georgia, gave a practical talk and illustration of health certificates which are rendering a great service to our live stock industry.

One of the most practical papers read before the Association was by Dr. C. J. Marshall, Professor of Veterinary Medicine, University of Pennsylvania. Dr. Marshall's paper was exten-

sively discussed by the convention, and will be published in one of the journals at an early date.

The entire afternoon program was given to "Small Animal Practice," by Dr. R. E. Rebrassier, who very ably handled his subject. A great deal of discussion was brought out, which shows the rapidly increasing interest that small animal practice is receiving by the veterinarians of the South.

The Association adopted a charter which was read to the convention by the Secretary, thereby incorporating the Southeastern States Veterinary Medical Association. At the time of adopting the charter, there were approximately three hundred members in good standing.

At the business session the following officers were elected: Dr. J. G. Ferneyhough, Richmond, Va., President; Dr. Jno. H. Morse, Sumter, S. C., First Vice-President; Dr. W. A. Barnette, Greenwood, S. C., Second Vice-President; Dr. J. H. Brown, Rich Square, N. C., Third Vice-President; Dr. Jno. I Handley., Atlanta, Ga., Secretary-Treasurer.

More than a hundred veterinarians attended the convention, which was one of the best meetings the Association has ever held. Thirty-two graduate veterinarians were elected to membership.

The next meeting will be held in Atlanta, Ga., the second Monday and Tuesday of November, 1925.

J. I. HANDLEY, *Secretary-Treasurer.*

DIXIE VETERINARY MEDICAL ASSOCIATION

The Dixie Veterinary Medical Association held its second annual meeting in Memphis, Tenn., at the Hotel Claridge, November, 12-13, 1924. The meeting was called to order by Dr. W. L. Gates, of Clarksdale, Miss., in the absence of the president, Dr. F. J. Douglas, who was physically unable to attend. The address of welcome was delivered by Hon. J. Rowlett Paine, Mayor of Memphis. The following papers were read and discussed:

"Field Investigation of Hemorrhagic Septicemia," Dr. W. B. Lincoln, State Veterinarian of Tennessee.

"Effectiveness of Hemorrhagic Septicemia Aggressin," Dr. H. J. Shore, Laboratory Director, Fort Dodge Serum Co.

"Canine Distemper," Dr. D. A. Piatt, Birmingham, Ala.

"Anesthesia (Local and General) as Pertaining to Spaying in the Cat and Bitch," Dr. C. L. Allen, Memphis, Tenn.

"Present Status of Rabies in the United States," Dr. A. Eichhorn, Pearl River, N. Y.

"How the Veterinarian Can Help the Live Stock Industry in the South," Dr. C. A. Cary, State Veterinarian of Alabama.

Wednesday evening a banquet and entertainment (including dancing) was given by the Association, and was greatly enjoyed until a late hour. At this gathering, the election of officers for the ensuing year was held and the following were elected: President, Dr. C. A. Cary, Auburn, Alabama; First Vice-President, Dr. Robert F. Fisher, Paducah, Ky.; Second Vice-President, Dr. J. C. Young, Marianna, Ark.; Secretary-Treasurer, Dr. C. C. Brown, Memphis, Tenn.

The Thursday morning meeting was called to order at 9:30 a. m. The following papers were read and discussed:

"Swine Diseases," Dr. A. T. Kinsley, Kansas City, Mo.
"Contagious Abortion and Its Practical Control," Dr. J. W. Connaway, Columbia, Mo.
"Classification of Veterinary Information and Activities," Dr. J. H. Bux, State Veterinarian of Arkansas.

The Thursday afternoon meeting was called to order at 1:30 p. m., and the entire afternoon was taken up in the discussion of anthrax. The following papers were read:

"Field Experiences with Spore Vaccine," Dr. W. L. Gates, Clarksdale, Miss.
"Anthrax Aggressin," Dr. C. E. Salsbery, Jensen-Salsbery Laboratories.

The discussion of various phases of anthrax was taken up by almost every veterinarian at the meeting and a great deal was said in regard to what was the safest prophylactic vaccine to be used in this very virulent anthrax region, some practitioners claiming that the weak spore vaccine was not sufficient to produce immunity in this particular section of the country and, as a result of this discussion, it was the unanimous opinion that no product weaker than No. 3 spore vaccine would ward off the attacks of anthrax in this Southern belt.

Twenty-two new members were elected to membership. The dates fixed for the 1925 meeting are October 14-15, with the meeting place at the Hotel Claridge, Memphis, Tenn.

C. C. Brown, *Secretary.*

SAC-CALHOUN COUNTY VETERINARY ASSOCIATION

The Sac-Calhoun County (Iowa) Veterinary Association met at Rockwell City, Iowa, November 19, 1924. Officers for the ensuing year were elected as follows: President, Dr. Elmer Groves, Newell; vice-president, Dr. P. E. Treman, Odebolt; secretary, Dr. C. L. Little, Lohrville.

CENTRAL MICHIGAN VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Central Michigan Veterinary Medical Association was held at the Otsego Hotel, Jackson, Michigan, November 20, 1924, with almost forty members and visiting veterinarians in attendance. In the absence of President C. C. Mix, Dr. Ward Giltner occupied the chair.

Senator B. E. Brower addressed the meeting, and promised to support any legislation in which the veterinary profession was interested, provided that it was in the interests of the public at large. Mr. Brower acknowledged the importance of the veterinary profession, and emphasized the fact that every member could be a power for good in his own community.

Dr. Floyd R. Town, City Health Officer of Jackson, urged the veterinarians to lend their support in promoting ordinances and regulations which would insure better inspection of meat, milk, and other animal food products.

Dr. H. J. Stafseth, of Michigan Agricultural College, discussed developments in poultry pathology. He mentioned particularly the possibilities attending the use of tryparsamide in certain infections. Leg weakness was also discussed by Dr. Stafseth, who reported the condition to be unusually prevalent throughout the state this fall.

The work of the A. V. M. A. was described by Dr. H. Preston Hoskins, Secretary-Editor. He stated that the Association had a larger percentage of eligibles enrolled as members than was the case with a number of other large national organizations of a professional character.

Dr. E. T. Hallman, of Michigan Agricultural College, presented "Newer Aspects of Diseases of the Udder and the Reproductive Organs in Cattle." He dwelt particularly on infectious abortion and mastitis.

Dr. A. E. Erickson, of Charlotte, described the exhibit which he got up for the recent Eaton County Fair. Plans were discussed for extending this idea and having a number of such exhibits for the 1925 fairs.

Dr. Ward Giltner outlined the program for the second annual post-graduate short course, to be given at Michigan Agricultural College the last week in January.

The meeting wound up with a dinner. Dr. Hoskins acted as toastmaster, and called upon a number of those present for short

speeches. The main address of the evening was by Dr. H. M. Newton, who recently returned from California, where he spent about six months in fighting foot-and-mouth disease.

Election of officers resulted as follows: President, Dr. R. W. Richmond, Springport; Vice-President, Dr. Lee Y. Davison, Manchester; Secretary-Treasurer, Dr. W. N. Armstrong, Concord.

W. N. ARMSTRONG, *Secretary.*

UNITED STATES LIVE STOCK SANITARY ASSOCIATION

The twenty-eighth annual meeting of the United States Live Stock Sanitary Association was called to order at the Hotel La Salle, Chicago, Ill., December 3, 1924, by President J. G. Ferneyhough, of Richmond, Va.

The program opened with memorial exercises directed by Dr. J. I. Gibson. Four members of the Association had been lost by death during the year. These were: Drs. George W. Dunphy, Owen Moore, Fred Torrance, and J. H. Blattenberg. Dr. N. S. Mayo eulogized these departed members, and included words of respect for the wives of two members—Mrs. L. H. Howard and Mrs. David S. White—whom death had removed during the year. Later, a resolution was adopted in memory of the late Secretary of Agriculture, Henry C. Wallace.

Following the presidential address, the special committee on foot-and-mouth disease presented their recommendations for the adoption of uniform quarantine regulations by the individual states whenever the emergency should arise. Attention was directed to the fact that many of the state quarantines were not based upon good common sense, and in many cases reacted to the loss of shippers of live stock and caused a great deal of embarrassment to common carriers.

The report of Dr. O. E. Dyson, Secretary-Treasurer, showed that the Association was in a very greatly improved financial condition.

The afternoon session was devoted to a program arranged by the Committee on Contagious Abortion. Under this heading, the following papers were presented and discussed:

"The Control of Contagious Abortion and Sterility from the Standpoint of the Clinician," by Dr. W. L. Boyd, University of Minnesota.

"The Control of Contagious Abortion from the Standpoint of

the Breeder," by H. W. Norton, Jr., Live Stock Commissioner, Michigan Department of Agriculture.

"Regulating Traffic in Contagious Abortion," by Dr. J. H. Coffman, Assistant State Veterinarian, Atlanta, Ga.

These papers were followed by the presentation of the report of the Committee on Contagious Abortion.

Dr. V. A. Moore, of Cornell University, presented a paper entitled, "Rabies and Its Control." Dr. W. H. Welch, of Lexington, Ill., presented, "Some Shipping Problems Affecting the Practitioner."

The Thursday morning program was devoted to the subject of milk hygiene. Dr. S. E. Bruner, of Harrisburg, Pa., read a paper which had been prepared by Dr. G. W. Grim, of Ardmore, Pa., entitled, "Several Uncontrolled Factors Frequently Associated with the Commercial Process of Pasteurizing Milk."

Dr. M. J. Prucha, of the University of Illinois, presented the subject of "The Relation of Milk Utensils to the Quality of Milk." Dr. Prucha pointed out the very important role played by the utensils which come in contact with milk after it leaves the cow.

Health Commissioner Bundesen, of Chicago, addressed the meeting on the subject of "Milk and Its Relation to Health." He related what the Chicago Health Department had done to popularize milk as a food and urged everyone to drink at least a quart of milk every day.

Dr. O. C. Bowes, inspector for the Pittsburgh Certified Milk Association, read a paper entitled, "Is Raw Milk Safe? How to Keep It So." Dr. Bowes, being a practical dairyman and a veterinarian, had a splendid grasp of the subject, and was convinced that more attention should be paid to other things than pasteurization. In the discussion of this paper, Dr. E. A. Crossman, of Boston, Mass., pointed out that pasteurization benefits only about one-half of the population, namely, those who reside in large cities where commercial pasteurization is practical.

The afternoon session was the largest attended of the meeting, and was devoted to tuberculosis. Dr. L. Van Es, of the University of Nebraska, presented "The Sources of Swine Tuberculosis." Dr. Van Es' paper was based upon the investigations which he has been conducting in Nebraska, and which show that a very large part of the tuberculosis found in swine is of avian origin.

Dr. Herbert Fox, of Philadelphia, Pa., gave a very scholarly address entitled, "Comparative Lessons in Infection, Detection, and Control of Tuberculosis." This was illustrated by numerous lantern slides. In addition to being Director of the Pepper Clinical Laboratory of the University of Pennsylvania, Dr. Fox is also Pathologist of the Philadelphia Zoological Gardens, and has had a very rich experience in the field covered by his address.

Hon. John D. Jones, Jr., Commissioner of Agriculture of Wisconsin, addressed the meeting on the subject of "Bovine Tuberculosis Eradication in Wisconsin from an Administrative Standpoint." Dr. B. A. Beach, of the University of Wisconsin, presented a paper prepared by himself and Prof. E. G. Hastings, entitled, "The Cause of Skin Lesions in Tuberculin-Reacting Cattle."

"Preliminary Organization of the Factors Involved in Tuberculosis-Free Areas" was presented by Mr. R. L. Cuff, of the Kansas City Live Stock Exchange. These five papers were discussed as a group, and a number of very important points were emphasized by those who took part in the discussion.

The Friday morning session was devoted to the diseases of swine. Dr. C. H. Hayes, of Lincoln, Neb., presented a paper entitled, "The Value of an Application of Sanitary Measures in the Control of Swine Disease," which was followed by a splendid discussion.

As a special order of business for 10 o'clock, at this session, Dr. John R. Mohler addressed the meeting on some of the lessons learned from the recent outbreaks of foot-and-mouth disease. Portions of a new film on this subject, being prepared by the Department of Agriculture, were also shown.

Several committee reports were presented, and officers for the new year elected as follows:

President, Dr. J. H. McNeil, Trenton, N. J.; Vice-Presidents, Dr. W. B. Lincoln, Nashville, Tenn.; Dr. L. Van Es, Lincoln, Neb.; Hon. M. J. Thornburg, Des Moines, Iowa; Hon. J. E. Boog-Scott, Houston, Texas, and Dr. G. H. Hart, Berkeley, Cal.; Secretary-Treasurer, Dr. O. E. Dyson, Kansas City, Mo.

Following the installation of the newly elected president, the meeting adjourned.

HORSE ASSOCIATION OF AMERICA

The annual meeting of the Horse Association of America, was held at the Blackstone Hotel, Chicago, Ill., December 3, 1924,

and was a very successful one. Directors elected were L. J. Elliott, John W. Kiser, A. B. Hancock, R. Lawrence Smith and J. J. Searcy. Wirth S. Dunham was re-elected president. R. Lawrence Smith and Frank H. Sweet were re-elected as vice-presidents and W. M. Brezette, treasurer. Wayne Dinsmore continues as secretary and Wm. E. Murphy as assistant secretary.

Plans for the coming year were fully discussed and it was decided to intensify our campaign by every possible means, especially in cities, as the city demand for good horses is the greatest incentive to breeders to produce the best types.

The afternoon addresses by M. L. Wilson, of the Department of Agriculture, and by J. G. Robertson, Live Stock Commissioner for the Province of Saskatchewan, were extremely valuable, in their relation to a reduction on the cost of production, through the use of large teams.

The banquet at the Hotel Blackstone on Wednesday evening was attended by approximately 400, and proved to be one of the best ever held. The principal address, made by Major Elihu Church, transportation engineer for the Port of New York Authority, was a masterly exposition of the far reaching methods that are being adopted to cut terminal costs in large cities. The creation of freight zones and universal terminals will cut millions of dollars from present terminal costs. A brief synopsis of the Major's remarks is being printed at once, and the full address, illustrated, will be printed as soon as the cuts and diagrams can be made ready.

WAYNE DINSMORE, *Secretary.*

JAY-RANDOLPH COUNTY VETERINARY ASSOCIATION

The Jay-Randolph County (Ind.) Veterinary Association met at Portland, Ind., December 5, 1924. The meeting was held at the home of Dr. D. C. Mangas. The veterinarians were accompanied by their wives. A dinner was served following the meeting.

NORTHWESTERN INDIANA VETERINARY ASSOCIATION

The Northwestern Indiana Veterinary Association met at Valparaiso, Ind., November 20, 1924. About forty members were in attendance from eight counties.

Dr. R. C. Julien, State Veterinarian, gave a talk on "Diseases of Sheep," as the main feature of the program. Several other important topics were discussed by various members.

OFFICERS OF STATE VETERINARY MEDICAL ASSOCIATIONS

ALABAMA VETERINARY MEDICAL ASSOCIATION

President..... Dr. J. S. Cook, Union Springs.
Vice-Pres..... Dr. J. R. Sullivan, Montgomery.
Sec.-Treas.....*Dr. C. A. Cary, Auburn.

ARKANSAS VETERINARY MEDICAL ASSOCIATION

President.....*Dr. R. W. Williams, Eldorado.
Vice-Pres.....*Dr. H. W. Wilson, Helena.
Sec.-Treas.....*Dr. Hubert Shull, 308 State Line, Texarkana.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. J. M. Arburua, San Francisco.
Vice-Pres.....*Dr. L. M. Hurt, Pasadena.
Secretary.....*Dr. J. P. Bushong, 414 N. Larchmont Blvd., Los Angeles.
Treasurer.....*Dr. J. A. Boyd, 505 S. 2nd St., San Jose.

COLORADO VETERINARY MEDICAL ASSOCIATION

President.....*Dr A. N. Carroll, Pueblo.
1st Vice-Pres..... Dr. W. G. Blake, Johnstown.
2nd Vice-Pres.....*Dr. H. P. Scott, Fort Morgan.
Secretary..... Dr. A. G. Fisk, Box 1036, Greeley.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION

President..... Dr. J. H. Prophett, Suffield.
1st Vice-Pres.....*Dr. Edwin Laitinen, Hartford.
2nd Vice-Pres.....*Dr. I. R. Vail, New Haven.
Secretary.....*Dr. G. E. Corwin, 177 Sisson Ave., Hartford.
Treasurer.....*Dr. Thos. Bland, Waterbury.

NATIONAL VETERINARY ASSOCIATION OF CUBA

President.....*Dr. Angel Iduate, Havana.
1st Vice-Pres.....*Dr. F. Etchegoyen, Havana.
2nd Vice-Pres..... Dr. Jose Valdes Ruiz.
Secretary.....*Dr. Estanislao Hermoso, E. Villuendas 171, Havana.
Vice-Sec..... Dr. Rafael Lagarde.
Treasurer.....*Dr. C. A. Arias, Havana.

DELAWARE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. H. P. Eves, Wilmington.
Sec.-Treas.....*Dr. C. C. Palmer, University of Delaware, Newark.

FLORIDA STATE VETERINARY MEDICAL ASSOCIATION

President..... Dr. J. V. Knapp, Tallahassee.
Vice-Pres..... Dr. W. P. Link, Tampa.
Sec.-Treas.....*Dr. A. L. Shealey, University of Florida, Gainesville.

GEORGIA STATE VETERINARY ASSOCIATION

President.....*Dr. J. E. Severin, Athens.
Vice-Pres.....*Dr. W. E. White, Tifton.
Secretary..... Dr. Peter F. Bahnsen, 121 State Capitol. Atlanta.

HAWAII VETERINARY MEDICAL ASSOCIATION

President..... Dr. W. T. Monsarrat, Honolulu.
Vice-Pres.....*Dr. H. B. Elliott, Box 167, Hilo.
Sec.-Treas.....*Dr. P. H. Browning, Box 3319, Honolulu.

*Member of A. V. M. A.

IDAHO VETERINARY MEDICAL ASSOCIATION

President.....*Dr. H. E. McMillan, Filer.
Vice-Pres.....*Dr. J. H. Plank, Rupert.
Secretary.....*Dr. J. D. Adams, 909 No. 15th St. ,Boise.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. E. L. Quitman, Chicago.
Vice-Pres.....*Dr. R. E. Kluck, Forreston.
Sec.-Treas.....*Dr. L. A. Merillat, 1827 S. Wabash Ave., Chicago.

INDIANA VETERINARY MEDICAL ASSOCIATION

President.....*Dr. M. W. Scott, Vincennes.
Vice-Pres..... Dr. H. E. Whiffing, Lebanon.
Secretary.....*Dr. R. H. Boyd, 4928 E. Wash. St., Indianapolis.
Treasurer..... Dr. G. H. Roberts, Lafayette.

IOWA VETERINARY ASSOCIATION

President.....*Dr. H. D. Bergman, Ames.
1st Vice-Pres.....*Dr. R. D. Wall, Des Moines.
2nd Vice-Pres.....*Dr. W. E. Macklin, Coon Rapids.
Sec.-Treas.....*Dr. E. R. Steel, Grundy Center.

KANSAS VETERINARY MEDICAL ASSOCIATION

President.....*Dr. H. C. Gale, Clyde.
Vice-Pres..... Dr. C. A. Bliss, Osborne.
Sec.-Treas.....*Dr. Chas. W. Bower, 1128 Kansas Ave., Topeka.

KENTUCKY VETERINARY MEDICAL ASSOCIATION

President.....*Dr. W. W. Dimock, Lexington.
1st Vice-Pres..... Dr. M. H. Doller, Danville.
2nd Vice-Pres..... Dr. J. R. Hill, Hopkinsville.
3rd Vice-Pres..... Dr. F. A. Stevenson, Princeton.
Sec.-Treas..... Dr. J. A. Winkler, Newport.

LOUISIANA STATE VETERINARY ASSOCIATION

President.....*Dr. H. A. Burton, Arcadia.
Vice-Pres..... Dr. Paul Quilty, Lake Charles.
Sec.-Treas..... Dr. L. H. Bennett, Monroe.

MAINE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. E. E. Russell, Farmington.
Vice-Pres.....*Dr. C. L. Ryan. Dexter.
Sec.-Treas.....*Dr. P. R. Baird, Waterville.

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. C. M. Grubb, Rockland.
Vice-Pres.....*Dr. R. C. Reed, College Park.
Sec.-Treas.....*Dr. E. M. Pickens, College Park.

MASSACHUSETTS VETERINARY ASSOCIATION

President.....*Dr. John B. Lentz, Amherst.
1st Vice-Pres..... Dr. F. H. Bradley, Plymouth.
2nd Vice-Pres.....*Dr. W. F. McNamara, Worcester.
Sec.-Treas.....*Dr. H. W. Jakeman, 44 Bromfield St., Boston.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. H. Preston Hoskins, Detroit.
1st Vice-Pres.....*Dr. F. E. Stiles, Battle Creek.
2nd Vice-Pres.....*Dr. W. E. Coomer, Bay City.
3rd Vice-Pres.....*Dr. L. A. Wileden, Mason.
Sec.-Treas.....*Dr. E. K. Sales, 535 Forest St., East Lansing.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. R. L. West, Waseca.
1st Vice-Pres.....*Dr. B. L. Cook, Farmington.
2nd Vice-Pres.....*Dr. D. I. Remington, Tracy.
Sec.-Treas.....*Dr. C. P. Fitch, University Farm, St. Paul.

MISSISSIPPI STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. W. P. Ferguson, Grenada.
1st Vice-Pres.....*Dr. R. H. Mohlenhoff, Cleveland.
2nd Vice-Pres.....*Dr. B. M. Davenport, Scott.
Sec.-Treas..... Dr. C. G. Stalworth, Drew.

MISSOURI VETERINARY MEDICAL ASSOCIATION

President..... Dr. J. L. Jones, Blackburn.
Vice-Pres.....*Dr. J. C. Flynn, Kansas City.
Sec.-Treas.....*Dr. Fred C. Cater, 210 S. Moniteau St., Sedalia.

MONTANA VETERINARY MEDICAL ASSOCIATION

President.....*Dr. H. F. Wilkins, Lewiston.
Vice-Pres.....*Dr. E. D. Nash, Helena.
Sec.-Treas.....*Dr. Hadleigh Marsh, 545 No. Rodney St., Helena.

NEBRASKA STATE VETERINARY MEDICAL ASSOCIATION

President.....*C. J. Norden, Lincoln.
Vice-Pres.....*Leonard Collins, Stanton.
Sec.-Treas..... Dr. F. R. Woodring, Lincoln.

NEVADA STATE VETERINARY ASSOCIATION

President.....*Dr. W. H. Hilts, Elko.
Vice-Pres..... Dr. N. E. Nielsen, Reno.
Secretary.....*Dr. Edward Records, Univ. of Nevada, Reno.

NEW HAMPSHIRE

President..... Dr. J. E. Marsten, Manchester.
Vice-Pres.....*Dr. Fay F. Russell, Concord.
Sec.-Treas.....*Dr. H. S. Perley, Box 251, Hanover.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY

President..... Dr. J. W. Haffer, Paterson.
1st Vice-Pres.....*Dr. A. W. Smith, Orange.
2nd Vice-Pres.....*Dr. J. M. Herron, Bordertown.
Secretary.....*Dr. P. B. Silvester, 10 Sergeant St., Princeton.
Treasurer.....*Dr. H. Ticehurst, Tenafly.

NEW YORK STATE VETERINARY MEDICAL SOCIETY

President.....*Dr. Chas. S. Chase, Bay Shore.
Vice-Pres.....*Dr. F. E. McClellan, Buffalo.
Sec.-Treas.....*Dr. C. E. Hayden, 110 Irving Place, Ithaca.

NORTH CAROLINA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. S. A. Alexander, Monroe.
1st Vice-Pres.....*Dr. J. Howard Brown, Rich Square.
2nd Vice-Pres..... Dr. H. C. Rea, Charlotte.
Sec.-Treas..... Dr. W. A. Hornaday, Greensboro.

NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION

President.....*Dr. J. V. Miles, Ellendale.
Vice-Pres.....*Dr. T. O. Brandenberg, Lakota.
Secretary..... Dr. R. S. Amadon, Agricultural College.
Treasurer.....*Dr. B. C. Taylor, Hillsboro.

OHIO STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. B. H. Edgington, Wooster.
Vice-Pres.....*Dr. S. R. Craver, Youngstown.
Secretary..... Dr. W. R. Hobbs, Ohio State Univ., Columbus.
Treasurer.....*Dr. D. C. Hyde, Columbus.

OKLAHOMA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. C. R. Walter, Tulsa.
Vice-Pres.....*Dr. R. W. Bowerman, Hennessey.
Secretary.....*Dr. L. B. Barber, 100 Live Stock Exch., Okla. City.
Treasurer.....*Dr. F. Y. S. Moore, McAlester.

OREGON STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. E. R. Derflinger, Eugene.
1st Vice-Pres.....*Dr. I. C. Robison, McMinnville.
2nd Vice-Pres.....*Dr. T. B. Carter, Portland.
3rd Vice-Pres.....*Dr. P. T. Tweed, Lebanon.
Sec.-Treas.....*Dr. B. T. Simms, Corvallis.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. Raymon M. Staley, Philadelphia.
1st Vice-Pres.....*Dr. Ernest Hogg, Wilkes-Barre.
2nd Vice-Pres..... Dr. S. W. Mathues, West Chester.
3rd Vice-Pres.....*Dr. C. W. Springer, Uniontown.
Rec. Sec.....*Dr. C. S. Rockwell, 5128 Chestnut St., Philadelphia.
Cor. Sec.....*Dr. H. R. Church, c/o B. A. I., Harrisburg.
Treasurer..... Dr. D. R. Kohler, Boyertown.

SOUTH CAROLINA ASSOCIATION OF VETERINARIANS

President.....*Dr. T. J. Kinard, Ninety-Six.
Vice-Pres..... Dr. E. P. Stanton, Florence.
Secretary.....*Dr. M. R. Blackstock, 151 Hampton Ave., Spartanburg.

SOUTH DAKOTA VETERINARY MEDICAL ASSOCIATION

President.....*Dr. M. W. Ray, Clark.
Vice-Pres.....*Dr. George Faver, Mitchell.
Sec.-Treas.....*Dr. C. C. Lipp, Brookings.

TENNESSEE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. A. C. Topmiller, Murfreesboro.
1st Vice-Pres.....*Dr. S. A. Metcalf, Knoxville.
2nd Vice-Pres..... Dr. Ed. Wall, Covington.
Secretary.....*Dr. L. G. Brown, Franklin.
Treasurer.....*Dr. W. M. Giles, Franklin.

TEXAS STATE VETERINARY MEDICAL ASSOCIATION

President..... Dr. H. L. Blackburn, Fort Worth.
1st Vice-Pres.....*Dr. W. R. Sanderson, Brownwood
2nd Vice-Pres.....*Dr. D. Pearce, Leonard.
Secretary..... Dr. F. S. Palmer, 3018 Commerce St., Dallas.

UTAH STATE VETERINARY MEDICAL ASSOCIATION

President..... Dr. J. W. Chambers, Garland.
Vice-Pres..... Dr. J. I. Curtis, Richfield.
Sec.-Treas.....*Dr. E. A. Bundy, 2346 Hudson Ave., Ogden.

VERMONT VETERINARY MEDICAL ASSOCIATION

President.....*Dr. E. L. Miller, Newport.
1st Vice-Pres..... Dr. J. A. Rust, Burlington.
2nd Vice-Pres.....*Dr. K. M. Kennedy, Waterbury.
Sec.-Treas..... Dr. Geo. Thomas, Bradford.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

President.....*Dr. E. A. Robinson, Petersburg.
1st Vice-Pres..... Dr. P. M. Graves, Culpepper.
2nd Vice-Pres.....*Dr. W. H. Ellett, Richmond.
Sec.-Treas.....*Dr. H. T. Farmer, 316 N. Henry St., Richmond.

WASHINGTON STATE VETERINARY MEDICAL ASSOCIATION

President..... Dr. H. A. Trippeer, Walla Walla.
Vice-Pres.....*Dr. R. J. Donohue, Outlook.
Sec.-Treas.....*Dr. Carl Crozier, 311 Lottie St., Bellingham.

WEST VIRGINIA

President.....*Dr. Ernest Layne, Huntington.
Sec.-Treas.....*Dr. L. N. Reefer, Wheeling.

WISCONSIN VETERINARY MEDICAL ASSOCIATION

President.....*Dr. W. R. Swan, Stevens Point.
Vice-Pres.....*Dr. J. P. West, Madison.
Secretary.....*Dr. O. H. Eliason, 226 W. Gilman St., Madison.
Treasurer..... Dr. W. L. Richards, Morrisonville.

OHIO 1924 YEAR BOOK

The 1924 Year Book of the Ohio State Veterinary Medical Association has been published and distributed. It is a cloth-bound volume of 153 pages and is fully up to the high standard of previous editions.

Besides the proceedings of the 41st annual meeting, held in Columbus, Jan. 9-10-11, 1924, the book contains a great deal of other interesting information. The honor roll of the Association now contains 23 names. Lists of past presidents and secretaries are given, together with the officers and committees for the current year. The constitution and by-laws is published.

The list of active members contains 321 names. These who are members of the A. V. M. A. are so indicated. A list of the registered graduate veterinarians of Ohio is included, arranged by counties. In this list members of the State Association are so indicated.

The personnel of the Division of Live Stock Industry of the State Department of Agriculture is given, as well as the organization of the U. S. B. A. I. staff in Ohio. Secretary Hobbs is to be congratulated on a good job well done.

BIBLIOGRAPHY ON BOVINE INFECTIOUS ABORTION

Note. For a number of years the annual report of the United States Live Stock Sanitary Association contained a fairly complete bibliography on bovine infectious, abortion, together with the report of the committee on infectious abortion. The report for 1922 failed to include this bibliography on account of a change in the personnel of the committee.

Last year the Editor of the JOURNAL of the A. V. M. A. kindly consented to provide the space necessary for the annual installment of the bibliography in order to keep it available without interruption. The offer was repeated this year. The undersigned will be glad to receive notice of any corrections or omissions.

WARD GILTNER.

Albrechtsen.

1920—Die Unfruchtbarkeit des Rindes, ihre Ursachen und ihre Behandlung. R. Schoeta, Berlin.

Arkansas Experiment Station.

1922—Infectious abortion studies at the Arkansas station. Ark. Exp. Sta. Bul. 181, pp. 66-69. Abst. in Exp. Sta. Rec. Dec. 1923.

Barnes, M. F.

1922—Bovine infectious abortion. Jour. A. V. M. A., lxi, n. s. 14 (2), p. 133. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).

1923—Sterility in cattle. Jour. A. V. M. A., lxiv, n. s. 17 (1), p. 83.

Boerner, Fred, Jr.

1923—Glanders and bovine infectious abortion complement fixing antibodies in two apparently normal horses. Jour. A. V. M. A., lxiii, n. s. 16 (5), p. 591.

Boyd, W. L.

1923—The pathology of sterility in cattle. Jour. A. V. M. A., lxiii, n. s. 16 (5), p. 561.

Burnet, Et.

1922—Sur les rapports du *Bact. abortus* (Bang) et du *Micrococcus melitensis* Cpt. rend. hebdom. des séances de l'acad. des sciences, clxxv (18), pp. 790-793. Abst. in Bul. de l'Inst. Past., xxi (4), and in Cent. f. Bakt., I Abt., lxxv (11-12), p. 272.

Carpenter, C. M.

1923—*Bacterium abortum* invasion of the tissues of calves from the ingestion of infected milk. Corn. Vet., xiv (1), pp. 16-31.

Connaway, J. W.

1922—Facts relating to infectious abortion in cattle and swine; and their practical application. Jour. A. V. M. A., lxii, n. s. 15 (6), pp. 719-730.

Craig, J. F., & Kehoe, D.

1922—An outbreak of contagious abortion in an Irish dairy herd. Jour. Comp. Path. and Therap., xxxv (4), pp. 256-273. Abst. in Exp. Sta. Rec., xlviii (7), p. 678.

Detre, L., & Rohonyi, N.

1923—The diagnosis of bovine infectious abortion by means of agglutination and microscopic studies. Berl. Tierärzt. Wchnschr., xxxvii (30), pp. 345-347. Abst. in Exp. Sta. Rec., xlvii (7), p. 678. Abst. in Bul. de l'Inst. Past., xxi (6). Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).

Evans, Alice C.

1923—Experimental abortion in a cow produced by inoculation with *Bacterium melitensis*. Reprint 830, Pub. Health Rpt., pp. 825-826. Abst. in Bul. de l'Inst. Past., xxi (21). Abst. in Exp. Sta. Rec., xlix (4), p. 380.

1923—The nomenclature of the melitensis-abortus group of bacterial organisms. Pub. Health Rept., xxxvii (34), pp. 1943-1948. Abst. in Bul. de l'Inst. Past., xxi (21).

1923—The serological classification of *Brucella melitensis* from human, bovine, caprine, porcine and equine sources. Pub. Health Rpt., xxxviii (34), pp. 1948-1963. Abst. in Bul. de l'Inst. Past., xxi (21). Abst. in Exp. Sta. Rec., 1 (2), p. 183.

Fitch, C. P. *et al.*
1922—Report of the committee on abortion of the United States Live Stock Sanitary Association. Corn. Vet., xiii (1).
Gilman, Herbert L.
1922—A study of some factors influencing fertility and sterility in the bull. A thesis for the degree of Ph. D., Cornell University.
Giltner, Ward.
1923—The abortion problem. Proc. 41st Ann. Meet. and Summer Sess. Mich. State Vet. Med. Asso. Year book.
Glockner.
1922—Ueber die Bildung von Bakteriotropinen, gegen infektiösen Abortus mit Antektrol geimpften Rindern. Tierärzt. Rdsch., xxviii, s. 248. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).
Gminder, A.
1922—Nachweis von Spirillen als Ursache des ansteckenden Verkalbens auch in Deutschland. Berl. Tierärzt. Wchnschr., s. 184. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).
Gwatkin, Ronald.
1923—A modification of the complement fixation test for infectious abortion. Can. Vet. Rec., iv (2), p. 86. Abst. in Bul. de l'Inst. Past., xxi (18), p. 709.
1922—Some notes on the agglutination test for infectious abortion. Can. Vet. Rec., iii (4), p. 207. Abst. in Bul. de l'Inst. Past., xxi (6).
Hadley, F. B., & Beach, B. A.
1922—Relationship of infectious abortion in swine and cattle. Vet. Alumni Quar., Ohio State Univ., x (2), pp. 37-43, fig. 1. Abst. in Exp. Sta. Rec., xlvii (9).
Hagan, William A.
1922—The value of heat-killed cultures for the prevention of the *Bacillus abortus* inoculation disease of guinea pigs. Jour. Exp. Med., xxxvi (6), pp. 711-725. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 270.
1922—Studies on the disease of guinea pigs due to *Bacillus abortus*. Jour. Exp. Med., xxxvi (6), pp. 697-709. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 270.
1922—The susceptibility of mice and rats in infection with *Bacillus abortus*. Jour. Exp. Med., xxxvi (6), pp. 727-733. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 270.
Hallman, E. T.
1923—A summary of methods to control infectious abortion and sequelae. Proc. 41st Ann. Meet. and Summer Sess. Mich. State Vet. Med. Asso. Year Book.
Hart, Geo. H., & Traum, Jacob.
1923—Scours and pneumonia in calves. Univ. of Calif. Bul. 353, Coll. of Agr., Agr. Exp. Sta., Berkeley, Calif.
Hart, Geo. H., & Carpenter, C. M.
1923—Controlled vaccination experiments on cattle with *Bacterium abortum*. Jour. A. V. M. A., lxiv, n. s. 17 (1), p. 37.
Hart, Geo. H.
1923—The diagnosis of pregnancy in cattle. Univ. of Calif. Bul. 353.
1923—Methods of controlling abortion. Univ. of Calif. Bul. 353.
Hayes, Fred M.
1923—Diseases of the genital tract of cattle frequently associated with abortion. Univ. of Calif. Bul. 353.
Hetz, J.
1921—Untersuchungen über den Nachweis des Bangschen Abortusbazillus in der Milch unter besonderer Berücksichtigung seines Vorkommens in der Stuttgarter Marktmilch. Vet. Med. Dis. Giessen 1921. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).
Huddleson, I. F.
1923—The control of infectious abortion. Proc. 41st Ann. Meet. and Summer Sess. Mich. State Vet. Med. Asso. Year Book.
1923—Control of bovine infectious abortion. Mich. Agr. Exp. Sta. Quar. Bul., v (4). Abst. in Exp. Sta. Rec., xlix (5), p. 477.

1923—Further studies on the susceptibility of swine to bovine infectious abortion. Mich. Agr. Exp. Sta. Quar. Bul., vi (1), pp. 25-28.
1923—Anticomplementary action of fresh bovine serum. Jour. Inf. Dis., xxxiii (2), pp. 184-192. Abst. in Bul. de l'Inst. Past., xxi (18).
1923—The comparative pathogenicity of several strains of *Bacterium abortus* (Bang). Mich. Agr. Exp. Sta. Tech. Bul. 55. Abst. in Bul. de l'Inst. Past., xxi (21).

Illinois Station Report.
1922—Infectious abortion in swine. Ill. Sta. Rpt., p. 18.
1923—Infectious abortion in swine. Ill. Sta. Cir. 271, p. 4, fig. 2.

Jaffe, R. Herman.
1922—Ueber die experimentelle Infektion des Meerschweinchens mit dem *Bac. melitensis* (Bruce) und dem *Bac. abortus* (Bang.) Virchows Arch. 238, s. 119. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).

Januschke, E.
1922—Bemerkung zum Zusammenhang zwischen infektiösem Abortus and Sterilität. Zeit. f. Infektkr. parasitäre Krankheiten und Hyg. der Haustiera., xxiv (2).

Kalkus, J. W.
1923—The bull as a carrier of contagious abortion. West. Wash. Sta. Bimo. Bul., xi (4), p. 66. Abst. in Exp. Sta. Rec., 1 (2), p. 184.

Kallesee, A.
1923—What can be done in the control of infectious abortion in cattle? Tidskrift f. Dyrelager, Denmark. Trans. in No. Amer. Vet., iv (10).

Klimmer, M.
1922—Die Bekampfung des Seuchenhaften Abortus der Rinder durch Schutz-und Heilimpfung. München. Tierärzt. Wchnschr., lxxiii (49).

Klimmer, M., & Haupt, H.
1922—Die Pathogene Wirkung des Corynebakterium abortus infectiosi (Bang). Deut. Arch. f. klin. Med., cxxxix (112), s. 33. Abst. in Zeit. f. Fleisch und Milchhyg., xxxiii (1). Abst. in Cent. f. Bakt., I Abt., lxxv (11112) p. 271. Abst. in Zeit. f. die Ges. Hyg., ii (3).
1922—Ist das Korynebakterium abortus infectiosi (Bang) für Menschen pathogen? München. Med. Wchnschr., lxix, pp. 146-147. Abst. in Abst. of Bacty, vii (9), p. 318.

Krzywanek, F. W.
1921—Vergleichende Untersuchungen über de immunisierende Wirkung von Abtektrol, Abortin, usw. auf damit gegen den infektiösen Abortus geimpfte Rinder. Vet. Med. Dis., Dresden, 1921. Abst. in Cent. f. Bakt., Ref., lxxiv (11–12).

Lerche.
1922—Spirillen als Ursache ansteckenden Verkalbens. D. Tierärzt. Wchnschr., s. 281. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).

Mazzi, R.
1922—Seuchenhafter Abort und Maltafieber. Biochem. e terap. sperim. 1922, s. 71. Abst. in Zeit. f. Fleisch und Milchhyg., xxxiii (8).

Meyer, K. F., Shaw, E. B., & Fleischner, E. C.
1922—The pathogenicity of *B. melitensis* and *B. abortus* for guinea pigs. Studies on the genus *Brucella nov. gen.* iv. Jour. Inf. Dis., xxxi (2), pp. 159-197. Abst. in Zeit. f. die Ges. Hyg., iii (8), p. 482.

M'Fadyean, Sir John.
1921—Researches regarding epizootic abortion of cattle. Jour. Comp. Path. and Therap., xxxiv (2), pp. 105-126. (4), pp. 191-211.

Nicolle, Charles, Burnet Et., & Conseil, E.
1923—Le microbe de l'avortement épizootique se distingue de pouvoir pathogéne pour l'homme. Cpt. rend. hebdom. des séances de l'acad. des sciences, clxxvi (16), s. 1034-1036. Abst. in Zeit. f. die Ges. Hyg., v (2), s. 133. Abst. in Bul. de l'Inst. Past., xxi (21).

Oklahoma Station.
1922—The study of the effect of culture media upon the *Bacillus abortus* and the use of the biologics in the production of immunity. Okla. Sta. Rpt., p. 25. Abst. in Exp. Sta. Rec., xlix (5), p. 477.

Poppe, K.
1922—Die Diagnose und Bekämpfung des ansteckenden Verkalbens. D. Tierärzt. Wchnschr., s. 675. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 273.
Quinlan, John.
1923—Die Uebertragungsmöglichkeit von Abortus-bacillen auf. Kälber, die mit Milch von infizierten Kühen gefuttert werden. Arch. f. Wiss. u. Prakt. Tierheilk., xlix (415), s. 192-242. Abst. in Zeit. f. die Ges. Hyg., iv (2), s. 157. Abst. in Zeit. f. Fleisch und Milchhyg., xxxiii (16), s. 150. Abst. in Jour. Comp. Path. and Therap., xxxvi (2), pp. 129-133. Abst. in Exp. Sta. Rec., xlix (7), pp. 680-681.
Ragsdale, A. C., & Brody, S.
1922—Study of the colostrum with special reference to the effect of heat (pasteurization) on its physico-chemical, bacteriological, immunological and nutritional changes. Mo. Agr. Exp. Sta. Bul. 197, pp. 49-50. Abst. in Chem. Abst., xvii (23).
Sanderson, Everett S., & Rettger, Leo F.
1923—The paths of infection by *Bacterium abortus* in rabbits, guinea pigs and mice. Jour. Inf. Dis., xxxii (3), pp. 181-187. Abst. in Bul. de l'Inst. Past., xxi (21). Abst. in Zeit. f. die Ges. Hyg., iv (6), p. 405.
Schermer & Ehrlich.
1922—Die Immunisierung gegen das Seuchenhafte Verkalben (Abortus Bang). Aus dem Tierseucheninstutit der Landwirtschaftskammer für die Provinz Hannover. (Direktor: Dr. Schermer). Zeit f. Infektkr, parasitäre Krankheiten und Hyg. der Haustiera. Abst. in Zeit f. die Ges. Hyg., iii (6).
1923—Immunization against bovine contagious abortion. Berl. Tierärzt Wchnschr., xxxix (4), pp. 37-38. Abst. in Exp. Sta. Rec., xlviii (9), p. 880. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 273.
Schroeder, E. C.
1922—Bureau of Animal Industry investigations on bovine infectious abortion. Jour. A. V. M. A., lx (5), pp. 542-561. Abst. in Exp. Sta. Rec., Dec. 1922.
Sheather, A. Leslie.
1923—The occurrence of the abortion bacillus in the milk of infected cows. Jour. Comp. Path. and Therap., xxxvi (4), pp. 255-266. Abst. in Bul. de l'Inst. Past., xxii (7), pp. 311-312.
Sisson, S.
1923—Concerning sterility. Jour. A. V. M. A., lxiii, n. s. 16 (1), pp. 78-82.
Strodthoff, H.
1922—Beitrage zur Sterilitätsbehandlung in Abortusbeständen (Abortinimpfung-Eierstocksuntersuchenung). Arch. f. Wiss. Tierhlk., xlviii, s. 28. Abst. in Cent. f. Bakt., I Abt., lxxv (11112), s. 274.
Smith, Theobald, Orcutt, Marion L., & Little, Ralph B.
1923—The source of agglutinins in the milk of cows. Jour. Exp. Med., xxxvii, p. 153. Abst. in Cent. f. Bakt., I Abt., lxxv (11-12), p. 273.
Smith, Theobald.
1923—Further studies on the etiological significance of *Vibrio fetus*. Jour. Exp. Med., xxxvii (3), pp. 341-356. Abst. in Zeit f. die Ges. Hyg., iv (6), p. 406.
Smith, Theobald, & Little, Ralph B.
1922—Cow serum as a substitute for colostrum in new-born calves. Jour. Exp. Med., xxxvi (4), pp. 453-468.
1923—The absorption of specific agglutinins in homologous serum fed to calves during the early hours of life. Jour. Exp. Med., xxxvii (5), pp. 671-683.
Traum, Jacob, & Hart, Geo. H.
1923—Manifestations of abortion disease without demonstrable etiological factor. Univ. of Calif. Bul. 353.
Traum, Jacob.
1923—The importance of *Bacterium abortum* of Bang and other microorganisms in bovine infectious abortion. Univ. of Calif. Bul. 353.

Van Es, L.
1923—The abortion problem in farm live stock. Univ. of Neb. Agr. Exp. Sta. Cir. 21.
Weeter, H. M.
1923—Infectious abortion in domestic animals. Jour. Inf. Dis., xxxii (6), pp. 401-416. Abst. in Exp. Sta. Rec., xlix (5), p. 477.
White, Geo. C., Chapman, LeRoy M., & Rettger, Leo F.
1923—Infectious abortion in cattle (Calving and blood reaction of thirteen herds). Storrs Agr. Exp. Sta. Bul. 112. Abst. in Exp. Sta. Rec., xlix (8), p. 784.
Williams, W. L.
1923—A study of reports of abortion committees (Presented at the Meeting of the N. Y. State Vet. Med. Asso.). No. Amer. Vet., iv (8), p. 397, and iv (9), pp. 500-502.
1923—The male as a spreader of genital infections. Jour. A. V. M. A., lxiii, n. s. 16 (3), p. 281. Abst. in Corn. Vet., xiii (2), p. 108.
Zeller, H.
1921—Immunisierung mit Extrakten oder abgetöteten Kulturen des Bangschen Abortusbacillus gegen das seuchenhafte Verkalben. Berl. Tierärzt. Wchnschr., s. 606. Abst. in Cent. f. Bakt., Ref., lxxiv (11-12).
1923—Further investigations of infectious abortion of cattle. Arch. f. Wiss. u. Prakt. Tierheilk., xlix (113), pp. 65-116. Abst. in Exp. Sta. Rec., xlix (8), p. 785.

K. S. A. C. TO BROADCAST

Dean Dykstra announces that the Kansas State Agricultural College has established a radio broadcasting station which will be known as Station KSAC. Its wave length is 341 meters. With the exception of a few exceedingly powerful stations, KSAC is as powerful as any other station in the United States and has been heard in all parts of the country.

From time to time members of the veterinary faculty will give addresses. The first of these were scheduled to be given December 29-30-31, 1924, as follows:

"The Services of the Veterinarian to the Community," Dr. J. H. Burt.

"Animal Diseases Communicable to Man," Dr. R. R. Dykstra.

"The Importance of Early Medical Attention in Animal Diseases," Dr. J. F. Bullard.

The addresses are scheduled to be given during the noon-day period, beginning at 12:30 p. m. Dean Dykstra has suggested that veterinarians may have in mind certain topics which they would like to have broadcasted from KSAC. Send your suggested topics or the material to Dean Dykstra. He will do the rest.

Addresses for January are as follows:

Jan. 13—"Cornstalk Poisoning in Cattle and Horses," Dr. R. R. Dykstra.

Jan. 14—"Care of Diseased Udder," Dr. E. J. Frick.

Jan. 16—"Abortion Disease of Cattle," Dr. E. J. Frick.

NECROLOGY

MAJOR WILFRED J. STOKES

Major Wilfred J. Stokes, V. C., died November 3, 1924, at Camp Stotsenberg, Philippine Islands.

Born at Stratford-on-Avon, Canada, March 15, 1885, he received his veterinary training at the McKillip Veterinary College, and was graduated with the class 1907. He entered the army that year and served with the 5th and 6th Field Artillery at Fort Riley, Kans., until 1916. During the World War he was assigned to Schofield Barracks, in the Hawaiian Department, later to Camp Greenleaf, Georgia, and for a period in the Surgeon General's Office, at Washington. After completing the course of instructions in the Army Veterinary School, in 1920, he was transferred to the Field Artillery School, at Fort Sill, Okla., as Station Veterinarian. On Sept. 23, 1923 he sailed for the Philippines. While there he suffered from an attack of purpura hemorrhagica and was under orders to return home when death came.

Major Stokes joined the A. V. M. A. in 1912. He was one of the outstanding members of the Veterinary Corps, with a brilliant future before him. He is survived by a widow and one child.

AUSTIN PETERS

Dr. Austin Peters, of Boston, Mass., died at Noyers, France, December 9, 1924. He was in his 66th year, and had been abroad for about seven months.

The deceased was a graduate of the American Veterinary College, class of 1883, and in 1885 he was graduated from the Royal College of Veterinary Surgeons, London. He entered the service of the Commonwealth of Massachusetts in 1896, as a member of the Board of Cattle Commissioners, succeeding the late Dr. Frederick H. Osgood. Dr. Peters acted in that capacity until April 15, 1902, when the Cattle Commission was abolished. He was then appointed as Chief of the Cattle Bureau, in which position he served until October 5, 1910, having completed over 14 years in the service of the Commonwealth of Massachusetts.

Dr. Peters joined the A. V. M. A. in 1883, and at the time of his death only five members antedated him in membership. He is survived by his widow, two daughters, one son and two brothers.

HOWARD B. FELTON

Dr. Howard B. Felton, of Olney, Philadelphia, Pa., died December 7, 1924, at the age of 65. He had suffered a slight stroke two years ago and another in August last, and since that time had not been in good health.

The deceased was a son of the late Samuel K. and Anna M. Felton. He was a graduate of both the College Department (1881) and of the School of Veterinary Medicine (1888) of the University of Pennsylvania. After graduation he engaged in general practice and later became associated with the Dairy Division of the Philadelphia Department of Health as dairy inspector. A few years ago, on the death of his father, Dr. Felton gave up practice and assumed charge of the Felton, Sibley Company paint works.

Dr. Felton was always regarded as a man of the highest moral integrity and was possessed of unusual ability. He was greatly esteemed by all who knew him and his untimely demise will be keenly felt by his immediate friends. He is survived by his widow, two brothers and two sisters.

G. A. D.

WILBUR J. GOODER

Dr. Wilbur J. Gooder, of Osage, Iowa, died November 28, 1924, following injuries received in a peculiar accident earlier in the day. He was driving a colt with another horse, and as he drove up to the platform of a mill, at St. Ansgar, the colt jumped suddenly. Dr. Gooder was thrown out and two wheels passed over his chest. He died about six hours later.

Born January 26, 1878, at Dover, Wis., Dr. Gooder came to Iowa at the age of 16. His education was received at the Cedar Valley Seminary and the Chicago Veterinary College, from which institution he was graduated in 1907. He then located in Des Moines and practiced there for about five years with Dr. H. E. Talbot. He later moved to Osage, where he engaged in practice until a few years ago, when poor health caused him to retire from practice and take up farming.

Dr. Gooder is survived by his widow, two sons, a daughter, his father and mother, two sisters and two brothers.

NATHANIEL W. McCAUGHEY

Dr. N. W. McCaughey, of Presque Isle, Maine, died December 4, 1924, following a paralytic stroke three days prior.

Following his graduation from the United States College of Veterinary Surgeons, in 1914, Dr. McCaughey located at Presque Isle, and established a very fine practice, which extended over Aristook County.

Dr. McCaughey joined the A. V. M. A. in 1915. His death is the fifth to be recorded among the A. V. M. A. membership in the Pine Tree State, in less than a year and one-half.

J. E. JOHNSTON

Dr. J. E. Johnston, of Piqua, Ohio, died Oct. 19, 1924, after an acute illness of short duration.

Born on a farm near Grand Rapids, Ohio, he located in Piqua following his graduation from the Ontario Veterinary College, in 1896, and continued there until the time of his death.

Dr. Johnston was a member of the Ohio State Veterinary Medical Association, and was active in church and lodge work. He is survived by his widow, three brothers, and two sisters.

A. E. WILLIAMSON

Dr. A. E. Williamson died November 20, 1924, at St. Boniface Hospital, Winnipeg, Manitoba. He was a graduate of the Ontario Veterinary College, class of 1896, and practiced in the province of Manitoba for twenty-eight years, all but four of which were spent in the city of Winnipeg.

WILLIAM BLACKMAN

Dr. William Blackman, of LaSalle, Ill., died at St. Mary's Hospital, La Salle, November 25, 1924. A few weeks previously he had fallen and fractured his hip. He was 93 years of age at the time of his death and had not been in active practice for some time.

C. E. CAMPBELL

Dr. C. E. Campbell, of Lenoir City, Tenn., died November 18, 1924, in his 59th year. Besides practicing veterinary medicine, Dr. Blackman was an undertaker and was connected with several business enterprises in Lenoir City. He served as the first Recorder of his city, following its incorporation in 1906.

MARRIAGES

Dr. Earl E. Romberger (U. P. '21), of Reading, Pa., to Miss Ella Irene Miller, at New York, N. Y., August 23, 1924.

Dr. William Harward (U. S. C. V. S. '17), of Oakboro, N. C., to Miss Dora Lee Efird, at Albemarle, N. C., November 27, 1924.

BIRTHS

To Dr. and Mrs. E. B. Hollecker, of Kansas City, Mo., a daughter, Rita Irene, August 1, 1924.

To Dr. and Mrs. Lawrence P. Scott, of Waterloo, Iowa, a daughter, Joan, October 14, 1924.

PERSONALS

Dr. C. R. Peterson has located at Chatsworth, Ill.

Dr. K. N. Harker has located at Ravenwood, Mo.

Dr. George K. Needles (Chi. '20), of Hoytville, Ohio, is studying osteopathy.

Dr. Ed. Laurence, formerly of Mackville, Ky., has located at Harrodsburg, Ky.

Dr. M. Donahoe (Chi. '17) formerly at Milford, Iowa, has located at Breda, Iowa.

Dr. H. H. Guy (Gr. Rap. '10), has removed from Petersburgh to Walworth, Mich.

Dr. D. R. Herberich (Chi.) has removed from North English, Iowa, to Kempton, Ill.

Dr. T. J. Eagle (K. C. V. C. '03) gives his new address as 1003 Main Street, Bethany, Mo.

Dr. John Redmond (Ind. '19) has removed from Tuscaloosa, Ala., to Centerville, same state.

Dr. H. H. Sheeler (Wash. S. C. '21) gives his new address as Route E, Box 340, Modesto, Calif.

Dr. A. J. Dickman (K. C. V. C. '15) is located at Parma, Idaho. He is Deputy State Veterinarian.

Dr. Stanley G. Colby (Mich. A. C. '19) has been transferred from Marquette to Shaftsburg, Mich.

Dr. W. R. Crisler, of Shelbyville, Ind., has announced himself as a candidate for the office of mayor.

Dr. F. A. Ridgeway, of Paris, Ill., has been appointed County Veterinarian for Marion County (Ill.), at a salary of $4000.

Dr. George A. Scott (Ont. '86), of Waterloo, Iowa, was a recent visitor at Hot Springs, Ark., accompanied by Mrs. Scott.

Dr. H. B. Treman (McK. '01), of Rockwell City, Iowa, is recovering from a bad attack of la grippe, which affected his eyes.

Dr. Harold Lewis (Chi. '08), of Nashua, N. H., recently underwent the Pasteur treatment, following a bite by a rabid dog.

Dr. Joseph H. Gill (Cinn. '10), of Portsmouth, Ohio, recently suffered a severe injury to his hand while operating on a horse.

Dr. D. H. Udall (Cor. '13), of Ithaca, N. Y., attended the recent meeting of the U. S. Live Stock Sanitary Association, in Chicago.

Dr. O. G. Wiseman (O. S. U. '24) is now associated with Dr. R. R. Powell (O. S. U. '09), at 6917 Carnegie Ave., Cleveland, Ohio.

Dr. G. E. Golden (McK. '07) has returned to Sioux City, Iowa, after seven months spent in California on foot-and-mouth disease eradication.

Dr. J. O. Ashley, formerly of Stockwell, Ind., has removed to Tipton, Ind., to take over the practice of the late Dr. Kigin at that place.

Dr. J. C. McCabe (Chi. '13), of Iowa City, Iowa, recently took the Pasteur treatment, following a bite inflicted by one of his canine patients.

Dr. J. D. Eastwald, of Anderson, Ind., is heavily interested in a large turkey farm near Spooner, Ind. All turkeys on the farm are tuberculin tested.

Dr. J. E. Wurm (Ont. '02), of Pigeon, Mich., has purchased the Ford service station at Sebewaing, Mich. He will continue in practice at Pigeon.

Dr. Thos. H. Edwards (K. C. V. C. '09), of Pasadena, Calif., is in charge of rat control work for Los Angeles County, in connection with plague eradication.

Dr. E. H. Ingold (Chi. '18), formerly of Calmar, Iowa, is now at Orange City, Iowa, where he is in charge of tuberculosis eradication work for Sioux County.

Dr. V. Schaefer (Chi. '91), of Tekamah, Nebr., has had both eyes operated upon for cataract, within the past year, and is now able to do a limited amount of reading.

Dr. Ray S. Smiley (O. S. U. '19), recently of South Solon, Ohio, has removed to Findley, Ohio, where he is stationed on tuberculosis eradication work in Hancock County.

Dr. C. G. Kreidler (Cinn. '13) has been appointed Municipal Meat Inspector, for the city of Lexington, Ky. Dr. Boyd Jeffers has been appointed first assistant inspector.

Dr. V. A. Moore spoke before the State Dairymen's Association, in Syracuse, N. Y., November 13. His topic was, "How to Keep Accredited Herds Free from Tuberculosis."

Dr. F. J. Crow (K. C. V. C. '18) has located in Iowa City, Iowa, where he will conduct a small animal hospital and engage in general practice. Address: 215 North Dubuque Street.

Dr. W. M. Clarkson (Ont. '21), of Toronto, Ont., has been employed on ocean transit work with cattle since last spring. He has just returned via Montreal from one of his trips.

Dr. C. C. Stevens (Ont. '02), of Port Huron, Mich., took over the office of Veterinary Inspector of Dairy Cattle for Port Huron, on December 1, 1924, succeeding Dr. J. C. Valentine.

Dr. P. C. Ballou, who has practiced at Piper City, Ill., for thirty-five years, has disposed of his practice and enrolled as a student in the Reppert School of Auctioneering, at Decatur, Ind.

Dr. C. B. Michels (Chi. '17), of Evansville, Ill., has been appointed County Veterinarian for St. Clair County (Ill.), with headquarters at Belleville. He succeeded Dr. E. A. Laird on October 1.

Dr. C. F. Stout, of Indianapolis, Ind., suffered a loss of about $1000 recently caused by a fire in his veterinary hospital. Thirteen dogs, located in the kennels on the second floor, perished in the fire.

Dr. J. M. Miller (McK. '13), of Benton Harbor, Mich., recently lost his hospital and office in a fire, which was said to have been the thirty-fifth blaze of incendiary origin in Benton Harbor in two years.

Dr. L. H. Smith (O. S. U. '15), of Mt. Clemens, Mich., recently addressed a meeting of the dairymen of Macomb County on abortion and sterility. Dr. B. J. Killham (McK. '12), State Veterinarian, also addressed the meeting on area tuberculin testing.

Dr. J. W. Patton (Tex. A. & M. '21), who recently completed work for a Master's degree, at the Kansas State Agricultural College, has accepted a position in the Department of Poultry Husbandry, Massachusetts Agricultural College, at Amherst.

Dr. A. C. Farmer (O.S.U. '11), formerly stationed at Mt. Airy, N. C., with the U. S. Bureau of Animal Industry, is now located at 357 Somerville Avenue, Somerville, Mass. Dr. Farmer recently received a commission as Second Lieutenant in the Veterinary Reserve Corps.

Dr. F. J. Bolender (U. S. C. V. S. '14) has changed his address from Selma, Calif., to 405 Poplar St., Fresno, Calif. For the past three years Dr. Bolender has been employed as Field Veterinarian, with the California State Department of Agriculture. His territory covers the five southern counties in the San Joaquin Valley: Fresno, Modera, Tulare, Kings and Kern.

BUREAU TRANSFERS

Dr. Chas. A. Greenig (U.P. '18), from Raleigh, N. C., to Columbus, Ohio, on tuberculosis eradication.

Dr. Michael J. Hughes (N.Y.U. '20), from Buffalo, N. Y., to New York, N. Y., on meat inspection.

Dr. James P. Rimstidt (Cinn. '13), from Lansing, Mich., to Indianapolis, Ind., on tuberculosis eradication

Dr. Robert N. Birdwhistell (Cinn. '14), from Pearl River, N. Y., to Indianapolis, Ind., on virus-serum control.

Dr. Joseph S. Powell (Ala. '14), from Birmingham, Ala., to Fort Worth, Texas, on tick eradication.

Dr. Walter M. Haag (McK. '03), from Fort Worth, Texas, to New Orleans, La., on meat inspection.

Dr. Ernest N. Moline (K.C.V.C. '11), from Jackson, Miss., to Jacksonville, Fla., on tick eradication.

Dr. William H. Seabrook, from Newark, N. J., to Jersey City, N. J., on meat inspection.

Dr. Frank E. Pinkerton (Gr. Rap. '11), from Jersey City, N. J., to Newark, N. J., on meat inspection.